IN THE UNITED STATES PATENT OFFICE

In re Albert M. FLEISCHNER, Ph.D., "Herbal Composition for Weight Control"	Serial No. 10/693,442 Filed 23 October 2003

RULE 132 DECLARATION

I, Albert M. Fleischner, Ph.D., do hereby swear as follows:

1) I received a Bachelors of Science in Pharmacy in 1963 from Temple University, Philadelphia, Pennsylvania. I received a Masters of Science in Pharmaceutical Science in 1970 from Rutgers University, New Brunswick, New Jersey. I received a Doctorate in Philosophy in Pharmaceutical Sciences in 1976 from Rutgers University, New Brunswick, New Jersey.

2) After receiving my Doctorate in Philosophy, I worked as a Group Leader in Personal Care and OTC Products at the Lehn & Fink division of Sterling Drug Corporation; as the Manager of Technical Services for Amerchol Inc.; as a pharmaceutical manufacturing process development scientist at Schering Plough R&D; as the Director of Technical Service at International Sourcing, Incorporated; as the Director of Pharmaceutics at Roberts Pharmaceutical, Inc.; and as the Vice President of Manufacturing and Research & Development at Bradley Pharmaceutical.

3) I currently am the Chief Scientific Officer of the assignee for the captioned patent application. As such, I am responsible for, among other things, developing dietary supplement formulations and assessing the clinical support for dietary supplement labeling claims.

4) I am the inventor of record of United States Letters Patent No. 6,420,350, United States Published Patent Application No. 2002/0136781, and several others. I am the inventor of record of one of the references which is cited against the immediate application.

5) I therefore respectfully believe that I am one of skill in the art.

6) I have reviewed the art of record in this case, including Fanie Retief VAN HEERDEN *et al.*, *Pharmaceutical Compositions Having Appetite Suppressant Activity*, U.S. Letters Patent No. 6,376,657 and *Phytopharm boosts P57 Production*, Market letter (10 December 2001).

7) I have also reviewed the OFFICE ACTION dated 18 July 2005. I respectfully disagree with certain of the facts alleged by the OFFICE ACTION.

8) The OFFICE ACTION at page 3 says:

> Van Heerden et al. clearly and beneficially teach a weigh loss composition which comprises Hoodia gordonii as an active ingredient therein, as well as a method of reducing weight in a subject in need thereof via administering an effective amount of the Hoodia gordonii extract.

I respectfully disagree with certain of the facts asserted by this statement. I infer that the factual misstatements are based on an inaccurate factual assumption regarding the relationship between appetite suppression and weight loss.

Appetite Suppression Is Not Weight Loss

9) Appetite suppression is not the same thing as weight loss. To the contrary, one may reduce body weight without suppressing appetite; this may be done, for example, by increasing the animal's rate at which it metabolizes calories (e.g., by increasing physical activity).

10) Similarly, one may suppress appetite and not affect body weight. This is because reducing food intake may slow the body's metabolic rate, allowing the body to maintain its weight despite a lower caloric intake. This is why transient dieting is not considered effective to reduce body weight.

11) VAN HEERDEN confirms this. VAN HEERDEN demonstrates that fenfluramine (the reference standard appetite suppression drug) causes appetite suppression but does not cause weight loss. Example 44 says, "The reference standard, fenfluramine (7.5 mg/kg), produced statistically significant reductions in food consumption at 6 and 24 hours post-dose when compared with the relevant vehicle-treated control group. No statistically significant effects on water consumption or bodyweight were recorded." Column 57, lines 18 to 24 (emphasis added). VAN HEERDEN therefore teaches that fenfluramine-induced appetite suppression has no effect on body weight.

12) Similarly, VAN HEERDEN demonstrates that a newly-discovered chemical, 3-0-[-ß-D-thevetopyranosylcymaropyranosyl]-12ß-0-tigloyloxy-14ß-hydroxy-14-pregn-50-en-20-one, causes appetite suppression without weight loss. Example 44 says, "Sample 3 (active moiety) produced statistically significant reductions in food consumption at an oral dose of 5.0 mg/kg. No statistically significant effects on bodyweights were produced by the active moiety." *Id.* at column 57, lines 10 to 15 (emphasis added). VAN

HEERDEN therefore teaches that Sample 3-induced appetite suppression has no effect on body weight.

13) VAN HEERDEN thus confirms what one of skill in the art would know already – that appetite suppression alone does not affect body weight. Appetite suppression and weigh loss are two different clinical phenomena.

One Of Skill In The Art Would
Read VAN HEERDEN *Et Al*. To
Teach An Appetite Suppressant

14) One of skill in the art would read VAN HEERDEN to teach a compound for appetite suppression. VAN HEERDEN is titled, "Pharmaceutical Compositions Having Appetite Suppressant Activity." The Abstract teaches that VAN HEERDEN teaches "an appetite suppressant agent." The Specification begins, "the invention relates to an appetite suppressant agent, to a process for synthetically producing the appetite suppressant agent, to a process for extracting the appetite suppressant agent from plant material, to an appetite suppressant composition containing the appetite suppressant material, and to a method of suppressing an appetite." *Id*. at column 1, lines 16 to 23.

15) Thus, one of skill in the art would read VAN HEERDEN to teach an appetite suppressant.

One Of Skill In The Art Would Not Read VAN
HEERDEN To Teach A Weight Loss Composition

16) One of skill in the art would read VAN HEERDEN to teach appetite suppression. One of skill in the art would not, however, read VAN HEERDEN to teach a compound for weight loss. To the contrary, VAN HEERDEN teaches an "active moiety" (3-0-[-ß-D-

thevetopyranosylcymaropyranosyl]-12ß-0-tigloyloxy-14ß-hydroxy-14-pregn-50-en-20-one) which induces transient appetite suppression, but also induces a net weight ***gain***.

VAN HEERDEN Teaches That *Hoodia* Extracts
Cause Body Mass To Increase, Not Decrease

17) VAN HEERDEN teaches that hoodia extracts cause body mass to increase, not decrease. VAN HEERDEN provides ample experimental data showing this. The reference summarizes this data in Figures 6 and 5 (copies attached).

Figure 6

18) Figure 6 measures net change in body mass over a one week period following administration of a variety of test compounds. Some of the tested groups lost body mass, and some gained body mass, over the study period.

19) The group which clearly lost the most weight is Group 5. Group 5 lost 10.45% of body mass over the test period. Group 5 is the control group. Group 5 was not administered *hoodia gordonii* extract, nor 3-0-[-ß-D-thevetopyranosylcymaropyranosyl]-12ß-0-tigloyloxy-14ß-hydroxy-14-pregn-50-en-20-one.[1]

20) In contrast, Groups 1, 2, 3, and 4 retained significantly more body mass. Groups 3 and 4 lost less body mass than Group 5. Groups 1 and 2 actually *gained* body mass. Groups 1 to 4 were administered *hoodia gordonii* sap. Groups 1 to 4 therefore show that *hoodia gordonii* causes an animal to retain (or even gain) body mass, not lose it. Groups 1 to 4

[1] This is in line with experimental error, because VAN HEERDEN shows that rats can have a 10% per week weight variation, without having any appetite-affecting substance at all. This is shown by comparing Group 9 in Figure 5 and in Figure 6. Group 9 experienced a 3.51% weight loss over two weeks (shown in Figure 5), yet, as shown in Figure 6, a 9.59% gain in the second week. This shows an 11.95% weight loss during the first week, followed by a 9.59% gain. This is significant because it indicates that body mass can fluctuate 10% per week without having any active substance at all.

thus teach that *hoodia gordonii* extract may be effective to cause weight gain, not weight loss. This teaches away from my own invention.

21) Similarly, Group 6 shows a significant increase in body mass, while Groups 7 and 8 show little change. Groups 6, 7 and 8 were administered dried *hoodia gordonii* sap. Groups 6, 7 and 8 thus teach that *hoodia gordonii* may be effective to cause body mass gain, not loss. This teaches away from my own invention.

Figure 5

22) Figure 5 confirms this. Figure 5 measures net change in body mass over the week after administration of the appetite-suppressing compounds, and the week before administration of the appetite-suppressing compounds. Figure 5 thus provides data on normal weight variation before administering any appetite-suppressing compounds.

23) Notably, all tested groups lost weight over the two week period. (This could be because the test subjects lacked adequate sleep or physical activity during the fourteen day test, or disliked the food they were given, etc...) While all groups lost weight, however, some groups lost less weight than others.

24) The group which lost the most weight is Group 5. Group 5 lost 18.91% of body mass over the test period. Group 5 is the control group. Group 5 was not administered *hoodia gordonii* extract nor 3-0-[-ß-D-thevetopyranosylcymaropyranosyl]-12ß-0-tigloyloxy-14ß-hydroxy-14-pregn-50-en-20-one.

25) In contrast to Group 5, Groups 1, 2, 3, and 4 retained more body mass than Group 5. Group 3 and 4 lost less body mass than Group 5, and Group 1 and 2 actually *gained* body mass. Groups 1 to 4 were administered *hoodia gordonii* sap. Groups 1 to 4 therefore show that *hoodia gordonii* causes an animal to retain body mass, not lose it. Groups 1 to

4 thus teach that *hoodia gordonii* is effective to prevent weigh loss, not cause weight loss. This teaches away from my own invention.

26) Groups 6, 7 and 8 retained more body mass than control Group 5.

Figures 5 and 6 Together

27) VAN HEERDEN teaches the results of a two week study. Body mass was measured at the beginning. The ensuing first week was a control week, without any appetite-affecting substances administered to any group. At the end of the first week, body mass was again measured and test compounds were administered. One week after administration, body mass was again measured. Figure 6 provides the results for the week after administration (days 0 to 7). Figure 5 provides the results for the entire two week period (day -7 to day +7). VAN HEERDEN, however, neglects to graphically provide the results for the first week (day -7 to 0). We can, however, derive the results for this first week, by subtracting the results from the second week (Figure 6) from the results for the two weeks together (Figure 5).

28) The results for the first week teach that hoodia administration causes body mass increase, even in animals normally expected to lose body mass.

29) Group 6, for example, shows a 5% increase in body mass in the second week (the week following administration).[2] *See* Figure 6. For the entire two week period, Group 6 shows a 6% decrease in body mass. *See* Figure 5. This means that Group 6 lost 10% of its body mass during the week before administration of hoodia sap. (Losing about 10% the first week, and gaining back about 5% the second week, leaves a net change of about 6% for the two weeks taken together) This is in line with Group 5, the control group which also

[2] I round these percentages to the nearest whole number.

lost about 10% in body mass per week. In the week following administration, however, Group 6 gained body mass, rather than losing it. Group 6 therefore teaches that dried *hoodia gordonii* causes body mass to increase, even in subjects who would ordinarily be expected to lose body mass.

30) Group 7 confirms this. Group 7 shows a 1% increase in body mass in the second week (the week following administration). *See* Figure 6. For the entire two week period, Group 7 shows a 10% decrease in body mass. *See* Figure 5. This means that Group 7 lost 11% of its body mass in the week before administration of hoodia sap. This means that Group 7 lost 11% of its body mass before administration of hoodia sap, and gained 1% following administration. Group 7 therefore teaches that dried *hoodia gordonii* causes body mass to increase, even in subjects who would ordinarily be expected to lose body mass.

31) Group 8 confirms this. Group 8 shows a 1% decrease in body mass in the second week. *See* Figure 6. For the entire two week period, Group 8 shows a 14% decrease in body mass. *See* Figure 5. This means that Group 8 lost 15% of its body mass in the week before administration of hoodia sap. This means that Group 8 lost 15% of its body mass before administration of hoodia sap, and gained 1% following administration. Group 8 therefore teaches that dried *hoodia gordonii* causes body mass to increase, even in subjects who would ordinarily be expected to lose body mass.

32) Group 1 shows a 1% increase in body mass in the second week. *See* Figure 6. For the entire two week period, Group 1 shows a 9% decrease in body mass. *See* Figure 5. This means that Group 1 lost 11% of its body mass in the week before administration of

hoodia and gained 12% following administration. Group 1 therefore teaches that *hoodia gordonii* sap causes body mass to increase, even in subjects who would ordinarily be expected to lose body mass.

33) Group 2 shows a 4% increase in body mass in the second week. *See* Figure 6. For the entire two week period, Group 2 shows a 7% decrease in body mass. *See* Figure 5. This means that Group 2 lost 11% of its body mass in the week before administration of hoodia and gained 15% following administration. Group 2 therefore teaches that *hoodia gordonii* sap causes body mass to increase, even in subjects who would ordinarily be expected to lose body mass.

34) Group 3 shows a 2% decrease in body mass in the second week. *See* Figure 6. For the entire two week period, Group 3 shows a 12% decrease in body mass. *See* Figure 5. This means that Group 1 lost 10% of its body mass in the week before administration of hoodia and lost only 2% following administration. Group 3 therefore teaches that *hoodia gordonii* sap slows body mass loss – that is, it causes body mass to be conserved in subjects who would ordinarily be expected to lose body mass more rapidly.

35) Group 4 shows a 5% decrease in body mass in the second week. *See* Figure 6. For the entire two week period, Group 4 shows a 17% decrease in body mass. *See* Figure 5. This means that Group 4 lost 12% of its body mass in the week before administration of hoodia and lost only 5% following administration. Group 4 therefore teaches that *hoodia gordonii* sap slows body mass loss – that is, it causes body mass to be conserved in subjects who would ordinarily be expected to lose body mass more rapidly.

36) Thus, Groups 1, 2, 6, 7 and 8 teach that dried *hoodia gordonii* causes body mass to increase, even in subjects who would ordinarily be expected to lose body mass. Groups 3 and 4 teach that *hoodia gordonii* sap slows body mass loss in subjects who would ordinarily be expected to lose body mass more rapidly. All of these teach away from my own invention.

Figure 2

37) VAN HEERDEN teaches a possible reason for his test compounds to increase body mass. VAN HEERDEN summarizes this at Figure 2 (copy attached).

38) Figure 2 shows daily food intake following administration of a methanol extract of *trichocaulon piliferum*. Figure 2 shows rats' basal rate of food intake (shown at days 3-5) remains roughly constant at 17 grams of food per day.

39) After administering sap from *trichocaulon piliferum* (at day 5), however, the rats' rate of food intake transiently decreases quite sharply.

40) This period of reduced food intake, however, is transient. It is immediately followed by a prolonged period of *increased* food intake.

41) I suspect that VAN HEERDEN's *trichocaulon piliferum* compound transiently suppresses appetite, which in turn lowers the animal's metabolic rate, leaving the animal less able to quickly metabolize the subsequent increased caloric intake.

VAN HEERDEN Teaches 3-0-[-ß-D-thevetopyranosylcymaropyranosyl]-12ß-0-tigloyloxy-14ß-hydroxy-14-pregn-50-en-20-one, Not *Hoodia*

42) VAN HEERDEN does not teach nor claim a new use of the *hoodia* plant; to the contrary, VAN HEERDEN teaches the use of 3-0-[-ß-D-thevetopyranosylcymaropyranosyl]-12ß-0-tigloyloxy-14ß-hydroxy-14-pregn-50-en-20-one. See claims.

43) I advocate the opposite. I believe that the *hoodia* plant itself, rather than a chemical extract of it, can be used to safely and effectively control obesity. My solution lies not in a specific chemical present in the *hoodia* plant, but in the timing of the *hoodia* administration.

44) VAN HEERDEN replicated in laboratory rats the incidental (one-time) administration of *hoodia*. He shows that a one-time administration creates a transient appetite suppression phase (in his Figure 2, with the amount used, perhaps 48 hours), followed by an appetite stimulation phase of indeterminate duration. I propose repeat administration, before the onset of the appetite stimulation phase. In other words, the administration occurs at least as frequently as the length of the appetite suppression phase.

45) For example, my pending claims require repeat *hoodia* administration at least once every about 48 hours or, in any case, before the appetite-stimulating effect occurs.

46) In contrast to VAN HEERDEN, I also advocate longer-term administration, repeated over a period of weeks or months. When this repeat-administration is practiced over an extended period of time (at least 30-45 days), this may enable the user's body to adjust to a lower basal body weight, and thereby eventually perhaps eliminate the appetite stimulation phase altogether, and thus avoiding the eating binge -and weight gain- that follows incidental *hoodia* administration.

Contrary To The Teachings Of VAN HEERDEN, I Have
Shown That *Hoodia Gordonii* Is Effective For Weight Loss

47) Contrary to the teachings of VAN HEERDEN, I have shown that *Hoodia gordonii* is effective for weight loss. I have tested Hoodia gordonii administered to human subjects in several different dosage amounts. My results show that my claimed invention appears

to cause statistically-significant decreases in body mass in human test subjects. I here append the clinical results for two different studies on two different daily dosages of *Hoodia gordonii*.

48) The first study evaluated the clinical effect of placebo and Hoodia on body mass. For this study, I asked the scientific consulting organization of Marshall–Blum (Bangor, Maine) to test the efficacy of my invention.

49) The testing was performed according to the *Marshall – Blum Standard Operating Procedure* (SOP) (21 April 2004) for dietary supplement testing. These procedures govern how human test subjects are selected, how records are maintained, and other factors to assure the reliability of the experimental data produced. I attach a copy of this document as an exhibit.

50) This testing was also performed according to the *Marshall – Blum Product formulation Due Diligence* (3 May 2004). These procedures govern how compounds are selected for testing and other factors to assure the reliability of the experimental data produced. I attach a copy of this document as an exhibit.

51) They provided their experimental data in a report titled, *Dietary Supplements to Promote Healthy Weight Management.*

52) This raw experimental data was statistically analyzed by Thomas E. Wasser, Ph.D. I enclose a copy of his 5 June 2005 report. This report refers to my invention variously as the "supplement," or by the specific formulation name (X-32; Super X-32).

53) Dr. Wasser reports, "exercise alone (Placebo) leads to weight loss, there is also evidence that exercise with supplement leads to more significant weight loss than exercise alone."

See id. at page 5, Section 2. Dr. Wasser concludes, "In my opinion there is considerable evidence to conclude that both the X32 and Super X-32 products are having relevant effects on weight loss as compared to Placebo alone." *Id.* at pages 5-6.

54) This finding was confirmed in a second, independent study. That study was performed by International Research Services, Inc. (Port Chester, New York) according to *A Double-Blind, Randomized, Parallel Design, Placebo-Controlled Clinical Evaluation ...*, Protocol No. 3023GTC0904 (8 October 2004) (copy enclosed). The resulting experimental data was analyzed by Consult.Stat Statistical Services (Macungie, Pennsylvania). That analysis concludes, "subjects lost significantly more weight on the Trim Spa Product than did the Control group." *See* Thomas E. Wasser, Letter (17 April 2005) (copy enclosed) at page 4 (emphasis in original).[3]

55) The "CONCLUSIONS DRAWN FROM THE STUDY" address safety but also, more relevantly, I have found that 74% of the human test subjects taking Hoodia at the claimed amounts achieved a measurable reduction in body mass after twelve weeks of use.

56) The "SUMMARY OF WEIGHT LOSS RESULTS" concludes "with confidence" that the claimed invention is "significantly superior" to placebo in generating weight loss.

57) Our results would not have been expected by one of skill in the art at the time I made my invention.

58) There is a nexus between this evidence and the pending patent claims, because this evidence would be considered by one of skill in the art to have probative value in

[3] The final report refers to the tested product by the name of the manufacturer (the "Trim Spa Product") rather than the precise name of the test composition.

showing the pending patent claims are enabled and are non-obvious in light of the contrary teachings of the art of record.

59) I therefore respectfully believe that my pending claims are not obvious in light of VAN HEERDEN.

The San Tribesmen Used Hoodia For Water,
Rather Than For Appetite Suppression

60) As a final matter, I would like to correct a statement made in the Specification, regarding the prior art. As filed with the Patent Office, the patent Specification at page 3, lines 5 *et seq.*, says:

> *Hoodia gordonii* is a cactus. It has been used for years by the San tribesmen in South Africa to temporarily prevent hunger during extended hunting expeditions, during which food might not have been readily available. This use occurred as early as 1937, when a Dutch anthropologist studying the San noted their use of the *Hoodia* cactus.

Since the date that this patent application was filed, I have learned that this statement is not correct. To the contrary, Dr. Marthinus HORAK, a scientist at South Africa's Council for Scientific and Industrial Research, says that "the oft-quoted story that the San ate Hoodia to stave off hunger is 'nonsense'." *See* Laura JOHANNES, *Hoodia's Hunger Claims*, Wall Street Journal page D5 (13 December 2005) (copy attached). Rather, Dr. HORAK says that the San "do occasionally consume [*hoodia*] for its water content." *Id.* Thus, it appears that the San did in fact consume hoodia, albeit for its water content, not for appetite suppression. I apologize for any confusion this may have caused.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United State Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon or any patent to which this verified statement is directed.

Albert M. Fleischner

Albert M. FLEISCHNER, Ph.D.

Dated as of Wednesday, December 21, 2005

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June 5, 2005

Dr. Al Fleischner
Goen Technologies Corporation
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Cedar Knolls, NJ 07927

Dear Dr. Fleischner;

I am happy to provide you with the final report for your clinical trial conducted with Marshall and Blum. I am sorry for the delay in getting this to you, but the data analysis and research model used by Jim Blum were especially well conducted and allowed for sophisticated analysis. This report outlines the statistical procedures that I have used and includes interpretation sections for every variable that I examined. Of course all data can be examined and re-examined, but I trust that you will find this report to be very complete.

As always, should you have any questions regarding this report you should feel free to call me, and I can explain any of the findings.

You have already paid me for this report so there is not an invoice attached. Thank you again for your business and I trust that I will be talking with you soon regarding this report or other work that I have completed.

Sincerely,

Thomas E. Wasser, PhD
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Table of Contents:

All analysis for this report were conducted using the SPSS statistical package. The analysis procedures and rational for interpretation are provided in the beginning of each section.

Data were provided on CD from Marshall and Blum Clinical Research.

All analysis were conducted and interpreted by Dr. Thomas Wasser, Consult.Stat Complete Statistical Services, 5754 Loyola Street, Macungie PA 18062.

The author of this report has no financial holdings with Goen Technologies and was paid to provide this report on an independent basis. The interpretations made in this report are the authors, and are based on sound interpretation of statistical tests and results obtained by performing these statistical analysis.

Section 1: Goodness of fit analysis:

Two fundamental analysis steps are needed in order to validate the sample. First to insure that the samples are not biased by differential dropout, subjects that remained in the study will be compared against those that dropped out within each group (placebo, X32 and Super-X32). These analysis are completed on the baseline demographic variables:

- Height
- Body weight
- Systolic blood pressure
- Diastolic blood pressure
- Pulse
- Respiration

Table 1.1: Placebo group dropout analysis

Variable	In-Study (n=43)*	Drop-out (n=6)*	p-value
Height	65.84 ± 3.3	65.33 ± 4.8	0.742
Body Weight	191.2 ± 34.2	217.20 ± 52.1	0.109
Systolic BP	117.81 ± 14.6	132.00 ± 21.7	0.041
Diastolic BP	68.05 ± 8.2	78.0 ± 11.1	0.011
Pulse	74.33 ± 6.4	74.7 ± 12.8	0.951
Respiration	12.2 ± 0.7	12.7 ± 1.0	0.315

*Values are expressed as Mean ± Standard Deviation

Interpretation: This analysis demonstrates that there is not bias present in the data. There are no significant differences between those subjects that remain in the study as compared to those that dropped out. All p-value were not significant except for those related to blood pressure. In both cases the drop out group had higher values than did the group that remained in the study. Those that dropped out of the study had higher values on all variables. Other than those mentioned there were no other significant differences.

Table 1.2: X32 group dropout analysis

Variable	In-Study (n=39)*	Drop-out (n=11)*	p-value
Height	67.0 ± 3.7	63.8 ± 3.1	0.012
Body Weight	211.8 ± 44.9	203.8 ± 41.7	0.598
Systolic BP	122.8 ± 15.8	117.1 ± 13.9	0.283
Diastolic BP	71.3 ± 10.1	71.3 ± 14.9	0.988
Pulse	73.4 ± 7.7	72.6 ± 8.6	0.758
Respiration	12.3 ± 0.8	12.2 ± 0.6	0.780

*Values are expressed as Mean ± Standard Deviation

Interpretation: This analysis demonstrates that there is not bias present in the data. There are no significant differences between those subjects that remain in the study as

compared to those that dropped out except for height. This is not a key variable for the study.

Table 1.3: Super-X32 group dropout analysis

Variable	In-Study (n=39)*	Drop-out (n=11)*	p-value
Height	65.8 ± 3.5	65.8 ± 2.9	0.976
Body Weight	199.9 ± 30.8	185.0 ± 32.9	0.169
Systolic BP	120.2 ± 11.7	113.6 ± 14.9	0.132
Diastolic BP	71.7 ± 8.6	68.4 ± 9.8	0.271
Pulse	72.5 ± 7.7	75.3 ± 9.6	0.318
Respiration	12.0 ± 0.0	12.4 ± 0.8	0.167

*Values are expressed as Mean ± Standard Deviation

Interpretation: This analysis demonstrates that there is not bias present in the data. There are no significant differences between those subjects that remain in the study as compared to those that dropped out. All p-values were not significant.

Analysis of dropout rates within study arms:

Table 1.4: Chi-square of study dropout rate by study arm.

Group	In Study	Dropout	p-value
Placebo	43	6	0.359
X32	39	11	
Super-X32	39	11	

Analysis: Chi-Square test of association = 2.051, p-value = 0.359

Interpretation: There is no association between group membership and study dropout rate. For this comparison, the p-value greater than 0.05 indicates that there is not a differential dropout rate between the three study arms.

Baseline comparisons of completes between all groups:

Table 1.5: ANOVA results on baseline values by study arm.

Variable	Placebo (n=43)*	X32 (n=39)*	Super-X32 (n=39)*	p-value
Height	65.84 ± 3.3	66.9 ± 3.7	65.8 ± 3.5	0.235
Body Weight	191.2 ± 34.2	211.8 ± 44.9	199.9 ± 30.8	**0.045**
Systolic BP	117.8 ± 14.6	122.8 ± 15.8	120.2 ± 11.7	0.285
Diastolic BP	68.1 ± 8.2	71.3 ± 10.1	71.7 ± 8.6	0.127
Pulse	74.3 ± 6.4	73.4 ± 7.7	72.5 ± 7.7	0.515
Respiration	12.2 ± 0.73	12.2 ± 0.82	12.0 ± 0.00	0.196

*Values are expressed as Mean ± Standard Deviation

Post-hoc testing indicates a significant difference between Placebo and X32 arms p = 0.046. More detailed analysis is needed. I elected to perform a planned comparison ANOVA comparing Placebo versus X32 and Placebo versus Super-X32. Results of those two tests indicated no significant difference p=0.058 and p=0.745 respectively. Because of this analysis it was decided that no co-variation analysis was needed by baseline weight. No other significant differences in Table 5 were noted.

Other demographic measures (Gender and Age):

Gender:

Table 1.6: Gender dropout analysis

Gender	In-Study	Dropout	p-value
Female	31	6	
Male	92	22	0.675

Interpretation: There was no gender difference in the dropout rate as indicated by a p-value of 0.675.

Age:

Table 1.7: Age dropout analysis

Variable	In-Study*	Drop-out*	p-value
Placebo	41.1 ± 11.0	38.0 ± 14.2	0.543
X32	43.8 ± 10.9	34.6 ± 10.8	0.017
Super-X32	41.8 ± 10.9	34.8 ± 9.1	0.057
p-value	0.510		

*Values are expressed as Mean ± Standard Deviation

Interpretation: Interestingly, younger subjects tended to drop out of the study across all three groups. This was not significant in the Placebo arm (p=0.543), was trend significant in the Super-X32 group (p=0.057) and was statistically significant in the X32 group (p=0.017). The key statistic in this analysis is the In-study p-value which reflects the ANOVA results between all three groups. This statistic is not significant (p=0.510) which indicates there is no significant difference in age between the three study groups.

Section 2: Weight loss findings.

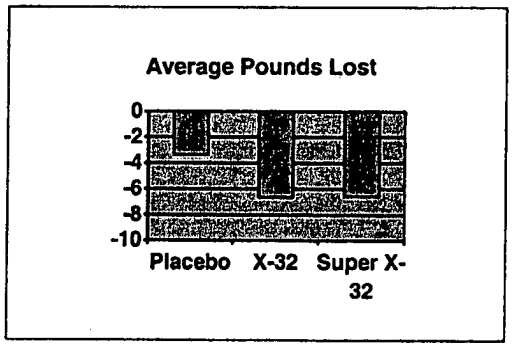
Final analysis: Report for weight loss at baseline versus completion at eight weeks. Analysis for weight loss was conducted in two ways. First, paired t-tests were used to assess the weight loss within the three arms comparing baseline weight to final weight at eight weeks. Secondly, Analysis of Variance (ANOVA) to detect any difference appearing at the end of the study, comparing all three groups simultaneously.

Paired t-test analysis within treatment arms: The following table demonstrates within group differences from baseline to eight weeks.

Group	Baseline	Eight Weeks	Average Loss	p-value
Placebo	191.2 ± 34.2	187.8 ± 34.4	3.36	0.001
X-32	211.8 ± 45.0	205.2 ± 43.3	6.61	<0.001
Super X-32	199.9 ± 30.8	193.4 ± 28.9	6.53	<0.001

There is evidence that exercise alone (Placebo) leads to weight loss, there is also evidence that exercise with supplement leads to more significant weight loss than exercise alone. This is determined by average loss and more significant p-value with equal study characteristics (time).

Analysis of Variance and Sample Size: ANOVA procedure was applied to the weight loss variable that was computed by subtracting (baseline weight – final weight). There was a statistical significance between groups at this point in the trial (p=0.046). Planned comparison t-tests between placebo and X32 indicated a significant difference between weight loss of 3.36 (placebo) and 6.61 (X32) demonstrates a significant difference (p=0.025). The same analysis found a significant difference between weight loss of 3.36 (placebo) and 6.53 (Super X32) with a p-value equal to 0.033.



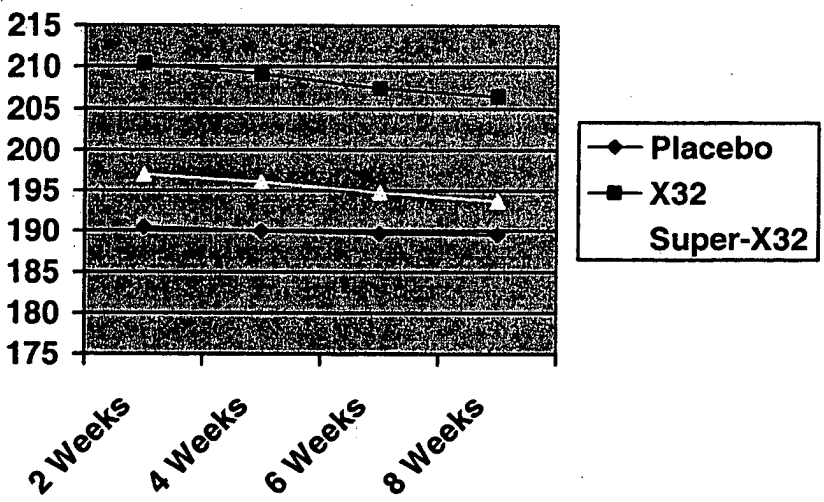
Conclusions: While it is clear that exercise alone leads to weight loss, as demonstrated by the significant loss in the placebo group, it is also clear that the X32 and Super-X32 supplements are having an additional effect as well. Head to head comparison between X32 and Placebo indicates that the X32 group is out performing Placebo. In my opinion there is considerable evidence to conclude that both the X32

and Super-X32 products are having relevant effects on weight loss as compared to Placebo alone.

Repeated Measures Analysis of Weight Loss*
(***Note:** Percent weight, Lean weight percent and Fat weight percent are located in the next session using this same repeated measures model.)

Weight Repeated Measures:

Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	190.43 ± 35.02	189.94 ± 35.90	189.62 ± 36.09	189.48 ± 36.49	0.282	N/A
X32	210.35 ± 42.71	209.11 ± 42.19	207.41 ± 41.75	206.45 ± 42.20	<0.000	2 weeks versus 6 and 8 weeks
Super-X32	197.02 ± 32.33	196.07 ± 32.26	194.80 ± 31.24	193.73 ± 31.54	<0.000	2 weeks versus 8 weeks
p-value	0.091	0.113	0.143	0.170		
Post-hoc	N/A	N/A	N/A	N/A		



Interpretation: This analysis provides the most convincing evidence of the effect of the Product than perhaps any other statistic. There is no significant difference in the Placebo group measured overtime, however both the X32 and Super-X32 group demonstrate highly significant weight loss over time (both $p<0.001$). More convincing evidence would have been provided if the ANOVA at eight weeks would have been statistically significant. The p-value of 0.170 at this time point prevents the analysis from being conclusive. Still the pattern of scores and the values of the repeated measures model (one of the most powerful and robust available) provide significant evidence of the existing effect of the product.

Section 3: Other variable findings

Variables for Blood Pressure (both Systolic and Diastolic), Pulse and Respirations were analyzed by two factor analysis of variance (ANOVA) the first variable is group membership, the second variable is the time measurement of the factor above. Post-hoc measures were Scheffé procedure.

Any p-value less than 0.05 were considered significant for the omnibus statistical model as well as the Post-hoc tests. There were no corrections for multiple comparisons used for this data.

The data are presented in table form for each variable as well as graphical format for ease of interpretation. Each variable is presented on a separate page as well.

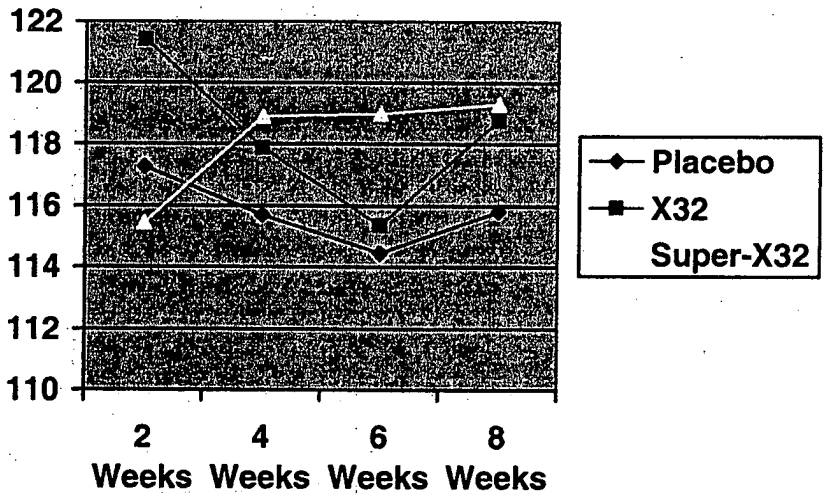
Sample Sizes for the repeated measures models were generally as follows

- Placebo: n=32
- X32: n=31
- Super-X32: n=32

As a repeated measures model, if any subject had a missing data element for any collection interval, that subjects data was deleted for the entire statistical model. Data were not interpolated for any time point to preserve the purity of the statistical model and analysis.

Systolic Blood Pressure:

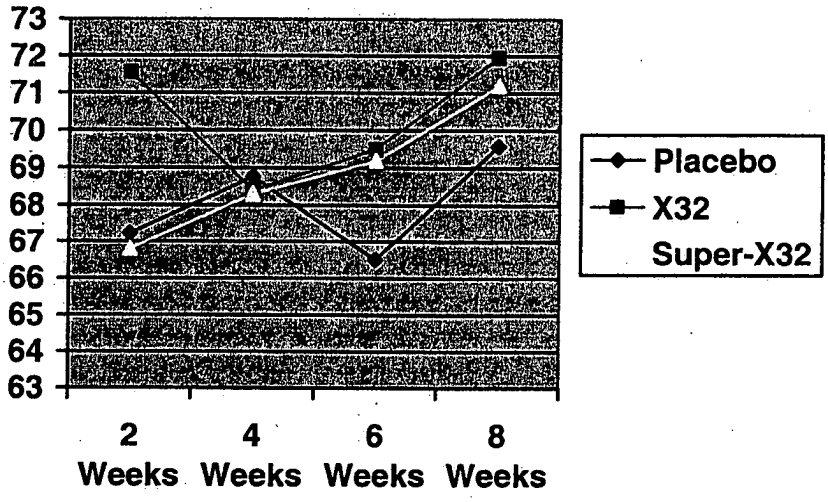
Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	117.25 ± 13.67	115.69 ± 13.49	114.44 ± 12.41	115.81 ± 12.25	0.539	N/A
X32	121.42 ± 15.50	117.87 ± 12.63	115.35 ± 12.38	118.77 ± 11.92	0.070	N/A
Super-X32	115.44 ± 9.62	118.91 ± 11.34	119.00 ± 13.92	119.31 ± 11.33	0.199	N/A
p-value	0.441	0.578	0.304	0.413		
Post-hoc	N/A	N/A	N/A	N/A		



Interpretation: There is not a significant difference between groups at baseline (2 weeks) as indicated by a p-value of 0.441. This indicates the randomization was effective in this variable. There is a dis-ordinal interaction between Super-X32 and both the Placebo and X32 groups between 2 weeks and 4 weeks. There is also a trend significant change in the X32 group over time as determined by a p-value of 0.070. While this is a trend significance the values are closely matched by the Placebo group which does not demonstrate a significant or trend significant relationship over time. The interpretation of this data is that there is no effect of Product on this variable.

Diastolic Blood Pressure:

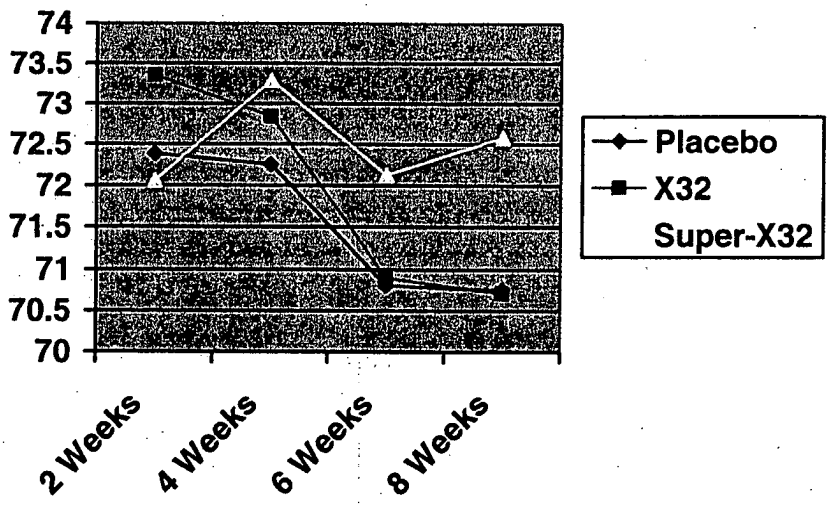
Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	67.22 ± 8.35	68.75 ± 8.36	66.50 ± 9.14	69.56 ± 7.83	0.179	N/A
X32	71.55 ± 9.97	68.39 ± 10.50	69.48 ± 7.83	71.94 ± 8.09	0.241	N/A
Super-X32	66.81 ± 7.25	68.31 ± 8.41	69.19 ± 9.95	71.19 ± 7.22	0.065	N/A
p-value	0.286	0.979	0.323	0.435		
Post-hoc	N/A	N/A	N/A	N/A		



Interpretation: There are no significant differences or within this data for either the repeated measures analysis or the between group ANOVA analysis. There is a trend significant increase over time for the Super-X32 group. This increase represents a five point increase over time. Based on the pattern of averages and the lack of significance in this model, the changes in mean values are interpreted to be normal variation in scores overtime. There is no effect of Product for this variable.

Pulse:

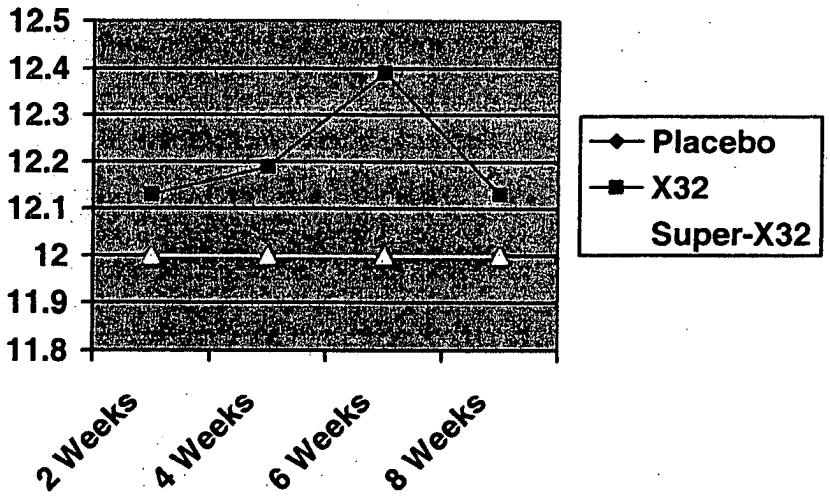
Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	72.38 ± 7.70	72.25 ± 7.85	70.81 ± 8.66	70.75 ± 6.62	0.463	N/A
X32	73.35 ± 8.52	72.84 ± 6.92	70.90 ± 6.53	70.71 ± 7.42	0.213	N/A
Super-X32	72.06 ± 6.54	73.29 ± 8.08	72.13 ± 6.49	72.58 ± 8.18	0.771	N/A
p-value	0.833	0.863	0.729	0.616		
Post-hoc	N/A	N/A	N/A	N/A		



Interpretation: There was not a significant difference in the mean values for pulse at baseline (2 weeks) validating the randomization procedures. There were no significant differences or trend significant differences in this data. The variation in mean values from one test to the other are assumed to be normal variation. There is no effect of the product in this variable.

Respiration:

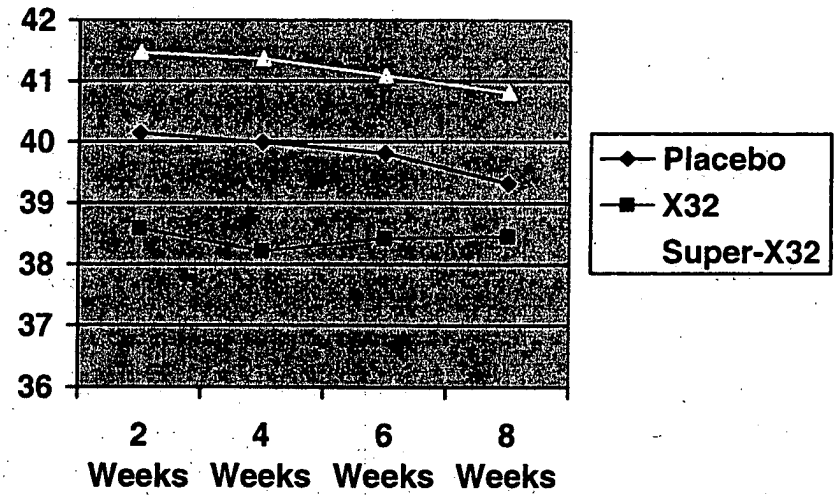
Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	12.00 ± 0.00	12.00 ± 0.00	12.00 ± 0.00	12.00 ± 0.00	1.00	N/A
X32	12.13 ± 0.50	12.19 ± 0.60	12.39 ± 1.20	12.13 ± 0.50	0.253	N/A
Super-X32	12.00 ± 0.00	12.00 ± 0.00	12.00 ± 0.00	12.00 ± 0.00	1.00	N/A
p-value	0.310	0.043	0.039	0.128		
Post-hoc	N/A	X32 versus both	X32 versus both	N/A		



Interpretation: Respiration was a constant in the Placebo and Super-X32 groups. There was a significant difference at four weeks and six weeks due to the lack of variation in those groups. While these values were significant they were caused by the lack of variation. There are no effects of Product visible for this variable.

Percent Fat:

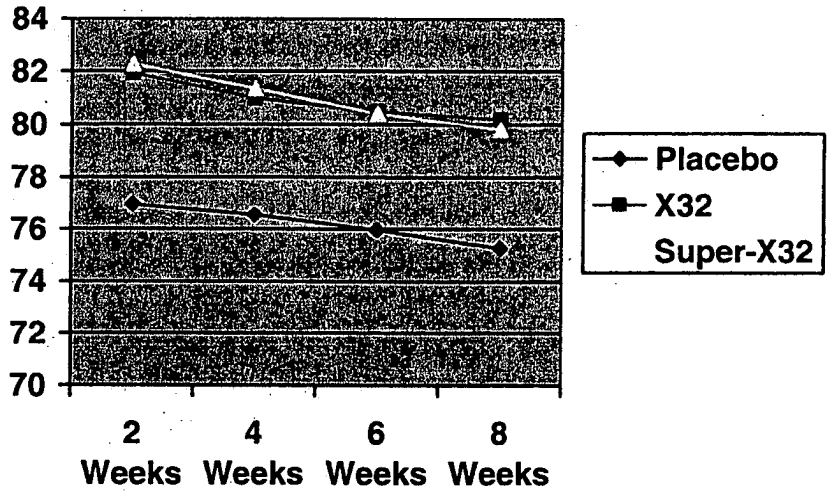
Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	40.14 ± 7.26	39.99 ± 7.54	39.81 ± 6.98	39.32 ± 7.51	0.053	N/A
X32	38.58 ± 8.91	38.22 ± 9.04	38.42 ± 8.91	38.46 ± 9.22	0.728	N/A
Super-X32	41.47 ± 7.12	41.37 ± 6.65	41.09 ± 6.94	40.81 ± 7.17	0.301	N/A
p-value	0.454	0.280	0.387	0.498		
Post-hoc	N/A	N/A	N/A	N/A		



Interpretation: There were no differences in the two week ANOVA for this data even though there appears to be some separation in these means between groups. There were no significant differences over time, however there was a trend significance for the Placebo group. This decline in mean is mainly attributed to a drop from the six week to eight week mean value. This drop is also seen in the Super-X32 group. There was a slight non significant increase in the X32 group after week four. However the final mean at week eight is still less than the starting point at week two. There is no evidence of any Product effect in this data.

Percentage of Weight – Fat:

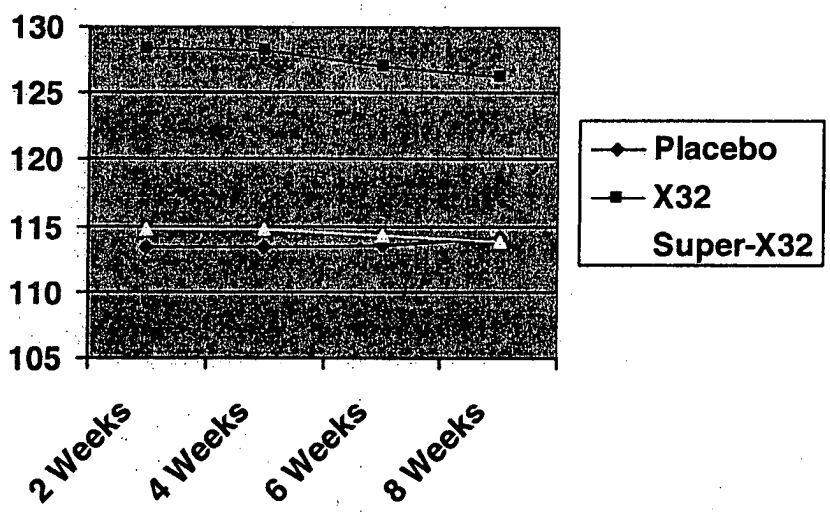
Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	76.97 ± 22.35	76.56 ± 23.09	75.98 ± 21.71	75.28 ± 23.47	0.130	N/A
X32	81.94 ± 27.47	81.00 ± 27.81	80.50 ± 27.53	80.20 ± 27.89	0.098	N/A
Super-X32	82.28 ± 21.77	81.36 ± 20.36	80.43 ± 20.30	79.80 ± 22.12	0.023	Week 2 versus Week 8
p-value	0.666	0.667	0.671	0.671		
Post-hoc	N/A	N/A	N/A	N/A		



Interpretation: While there is a separation of means at two weeks for the Placebo group as compared to both the X32 and Super-X32 group, it is not significant. There is a trend significant loss in Fat weight from Week two to Week eight in the X32 group and a significant loss in Fat weight from Week two to Week eight in the Super-X32 group. The Post-hoc test shows the difference to be significant between Weeks two and eight. The loss in the Placebo group is not significant. There does appear to be an effect of the Product for this data.

Percentage of Weight – Lean:

Group	2 weeks	4 weeks	6 weeks	8 weeks	p-value	Post-hoc
Placebo	113.46 ± 23.18	113.38 ± 23.77	113.63 ± 23.71	114.20 ± 23.93	0.522	N/A
X32	128.41 ± 28.94	128.12 ± 28.74	126.93 ± 28.22	126.25 ± 28.81	0.016	Week 2 and Week 4 versus Week 8
Super-X32	114.74 ± 21.63	114.72 ± 21.22	114.36 ± 22.00	113.93 ± 19.89	0.643	N/A
p-value	0.040	0.037	0.061	0.079		
Post-hoc	Placebo versus X32 P=0.062	Placebo versus X32 P=0.063	N/A	N/A		



Interpretation: There was a significant difference in mean weights at Week two indicating a problem with the randomization. The X32 group was significantly higher than both Placebo and Super-X32 groups. Neither of these later to groups had any significant changes over time while the X32 group demonstrated a significant change toward lower mean lean weights over time. The difference at baseline prevents this significance from being attributed to the Product and as a result of this analysis there is no effect.

Section 4: Blood chemistry findings

Sample Sizes were the following:

- Placebo: n=33
- X32: n=31
- Super-X32: n=32

On occasion when there were missing values on one variable observation time sample sizes have varied from pretest to posttest observations.

Analysis Methods:
Analysis of variance was conducted at baseline (pretest) and posttest time points. Pre – Post analysis was conducted by paired t-test.
Post-Hoc testing was performed using the Scheffe procedure. Any p-value that was less than ($p<0.05$) was considered significant for all statistical procedures.

Interpretation was made using standard criteria for randomized pretest posttest control group design models.

All normal range values were determined by reference to the following:

http://www.carbonbased.com/cbcblood.htm#Ratio's
MCV, MCH, MCHC, Globulin, Albumin/Globulin ratio, Neutrophils, Lymphocytes, Monocytes, Basophiles, Eosinophils, Anion Gap and BUN/Creatinine ratio.

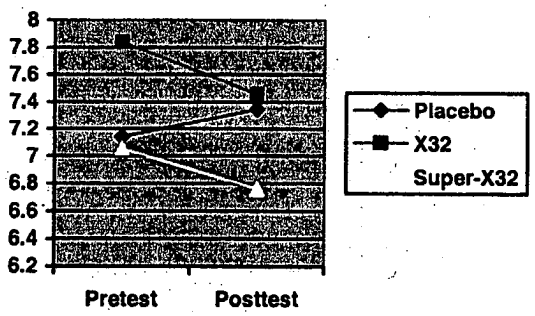
http://nordx.mmc.org/testcat/procedure.asp?ProcedureID=62
RDWSD, RDWCV, AB Neutrophils, AB Lymphocytes, AB Monocytes, AB Eosinophils and AB Basophiles.

Laboratory Handbook: Health Network Laboratories Volume 2: 1994.
All other values.

White Blood Cells:

Group	Pretest*	Posttest*	p-value
Placebo	7.14 ± 1.70	7.35 ± 1.21	0.161
X32	7.84 ± 2.17	7.46 ± 1.87	0.076
Super-X32	7.05 ± 1.70	6.76 ± 1.97	0.216
p-value	0.192	0.232	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



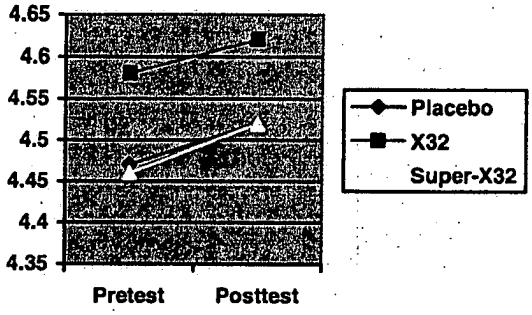
Normal ranges: There are no differences in WBC normal ranges between males and females. All values should be between 4.5-11.0x10^9/L.

Interpretation of results: There are no observed significant differences in the model. The lack of a significant difference between all three groups at baseline indicates valid samples due to randomization. Within the X32 group showed a trend significant decline in WBC. All values for all groups are within normal ranges. This data indicate normal variation in all groups and no effects do to treatment.

Red Blood Cells:

Group	Pretest*	Posttest*	p-value
Placebo	4.47 ± 0.33	4.52 ± 0.35	0.115
X32	4.58 ± 0.50	4.62 ± 0.43	0.378
Super-X32	4.46 ± 0.44	4.52 ± 0.38	0.074
p-value	0.475	0.511	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



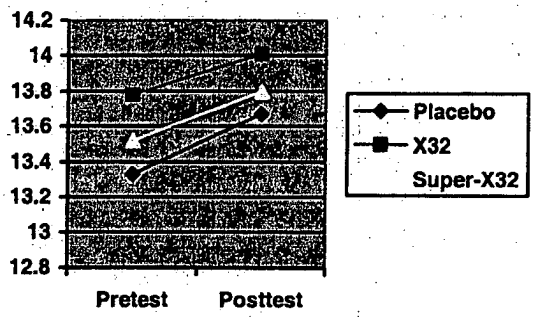
Normal ranges: There are differences in RBC between males and females. Males ranges are 4.6-6.2x10^{12}/L, and Female ranges are 4.2-5.4x10^{12}/L.

Interpretation of results: Based on these normal levels without stratification by gender, pretest values were in the low range. No significances were observed at pretest or posttest. The Super-X32 group should a trend significant gain with treatment. My interpretation is that there is no effect of treatment in these data and the changes are normal variation or a slight increase to normal based on regression artifact.

Hemoglobin:

Group	Pretest*	Posttest*	p-value
Placebo	13.33 ± 1.27	13.67 ± 1.29	0.002
X32	13.78 ± 1.36	14.01 ± 1.12	0.110
Super-X32	13.52 ± 0.99	13.80 ± 0.95	0.012
p-value	0.351	0.488	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



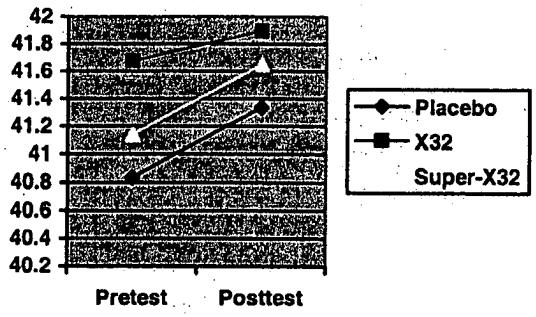
Normal ranges: There are differences in Hemoglobin normal ranges between males and females. Females ranges are 12.0-16.0 g/dL, and Male ranges are 13.5-18.0 g/dL.

Interpretation of results: The data for this analysis was not stratified by gender. Pretest values were low in general. Improvement was observed for all three groups overtime into the normal range. This increase was statistically significant for Placebo and Super-X32 groups. Based on these observations the gains are to be more likely due to regression effects. There is no effect of the product on the Hemoglobin level since the placebo group also increased at approximately the same rate.

Hematocrit:

Group	Pretest*	Posttest*	p-value
Placebo	40.83 ± 3.06	41.33 ± 3.09	0.125
X32	41.67 ± 3.59	41.89 ± 2.97	0.642
Super-X32	41.14 ± 3.04	41.65 ± 2.74	0.125
p-value	0.581	0.755	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



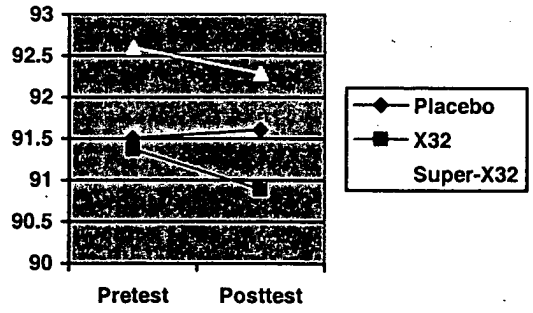
Normal ranges: There are differences in Hematocrit normal ranges between males and females. Females ranges are 38.0-47.0%, and Male ranges are 40.0-54.0%.

Interpretation of results: All mean values for both pretest and posttest are in the normal range. There are no significances observed in this data. Values for all groups increased slightly most likely due to normal variation. There is not an observed effect of the Product for this variable.

Mean Corpuscular Volume (MCV):

Group	Pretest*	Posttest*	p-value
Placebo	91.50 ± 4.39	91.60 ± 4.48	0.885
X32	91.37 ± 4.51	90.89 ± 4.72	0.064
Super-X32	92.60 ± 4.68	92.29 ± 4.54	0.487
p-value	0.495	0.493	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



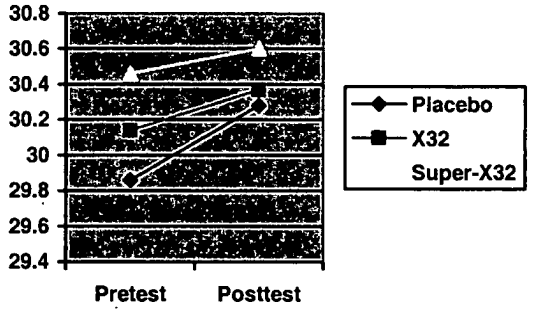
Normal ranges: There are no gender based normal values for this variable, as a result both males and females should be between 80.0 to 100.0 fL.

Interpretation of results: All observed means are within normal ranges for each time point regardless of product or placebo group membership. There are no baseline or posttest difference between all three groups for this variable. There is a slight increase in the Placebo group but not significant. There is also a trend significant decrease in the X32 group. I do not see any effects due to Product in the tests for this variable.

Mean Corpuscular Hemoglobin (MCH):

Group	Pretest*	Posttest*	p-value
Placebo	29.86 ± 1.85	30.28 ± 1.85	<0.001
X32	30.14 ± 1.39	30.37 ± 1.48	0.002
Super-X32	30.46 ± 2.03	30.60 ± 1.84	0.201
p-value	0.407	0.745	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



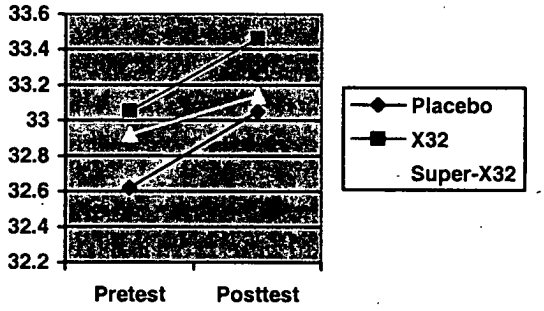
Normal ranges: There are no gender based normal values for this variable. As a result both males and females should be between 27.0 to 33.0 pg.

Interpretation of results: All observed means are within normal ranges for each time point regardless of product or placebo group membership. Increases in levels of MCH were observed for all three groups. Two of the group values reached significant levels (Placebo and X32, both $p<0.05$). Super-X32 also demonstrated an increase but this was not significant. Based on the observation that the Placebo group gained at approximately the same rate as the other groups and that there were no significant differences observed at pretest or posttest by ANOVA ($p=0.407$ and $p=0.745$ respectively) I find no effect of product on this variable.

Mean Corpuscular Hemoglobin Concentration (MCHC):

Group	Pretest*	Posttest*	p-value
Placebo	32.62 ± 1.04	33.05 ± 1.15	<0.001
X32	33.05 ± 1.00	33.46 ± 1.04	0.002
Super-X32	32.92 ± 0.93	33.14 ± 1.06	0.093
p-value	0.210	0.307	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



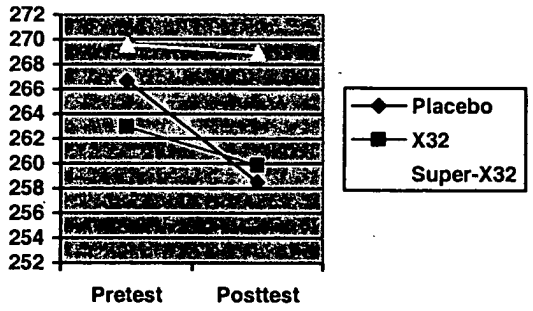
Normal ranges: There are no gender based normal ranges for this variable and as a result both males and females should be between 32.0 and 36.0 percent.

Interpretation of results: All observed means are within normal ranges for each time point regardless of product or placebo group membership. These findings are almost identical to those of MCH except for the fact that the gain in the Super-X32 group is now trend significant (p=0.093). The gains in the other two groups are statistically significant. However since there is not a significant difference in any of the groups at pretest or posttest by ANOVA, it should be noted that there is no evidence that the product effects this MCHC variable.

Platelets:

Group	Pretest*	Posttest*	p-value
Placebo	266.67 ± 61.16	258.55 ± 53.26	0.230
X32	262.94 ± 47.60	259.87 ± 57.55	0.558
Super-X32	269.56 ± 53.01	268.94 ± 54.79	0.927
p-value	0.901	0.719	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



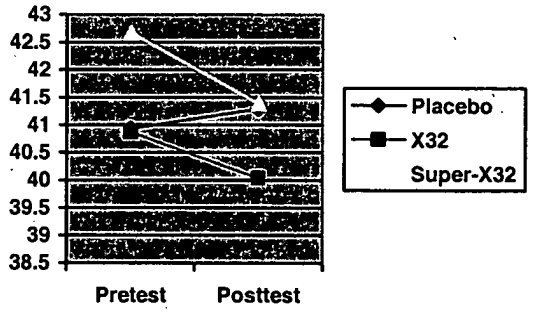
Normal ranges: There are no specific ranges for males and females, and values of 150-400x10 ^{9}/L are considered normal.

Interpretation of results: No statistical differences were observed for any treatment given, over-time nor by ANOVA at pretest or posttest. Therefore the observed differences are assumed to be normal variation in testing. All observed values are within normal limits. There is no observed effect of product on the Platelets variable.

Red Cell Distribution Width Standard Deviation:

Group	Pretest*	Posttest*	p-value
Placebo	40.93 ± 2.72	41.29 ± 2.95	0.498
X32	40.87 ± 3.58	40.04 ± 3.76	0.028
Super-X32	42.67 ± 9.03	41.39 ± 3.43	0.281
p-value	0.378	0.228	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



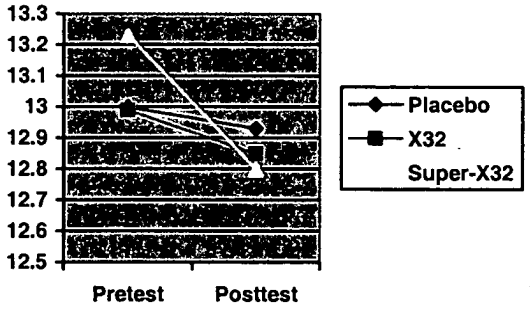
Normal ranges: There are no gender based normal ranges and as a result, values between 37.0 to 48.0 percent are considered normal for both genders.

Interpretation of results: All observed means were within normal limits for each group at each time point observed. The only observed significant difference was for the X32 group, pre to posttest measurement. This significant decrease was not observed for any other variable. There were also no differences in pretest or posttest ANOVA statistics, therefore it is assumed that the observed difference in normal variation and there is no effect of product. It is interesting to note that both X32 and Super-X32 values decreased with an increase in the Placebo group.

Red Cell Distribution Width Coefficient of Variation:

Group	Pretest*	Posttest*	p-value
Placebo	13.00 ± 0.66	12.93 ± 1.13	0.466
X32	12.99 ± 0.48	12.85 ± 0.54	0.039
Super-X32	13.23 ± 1.60	12.80 ± 0.63	0.095
p-value	0.577	0.831	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



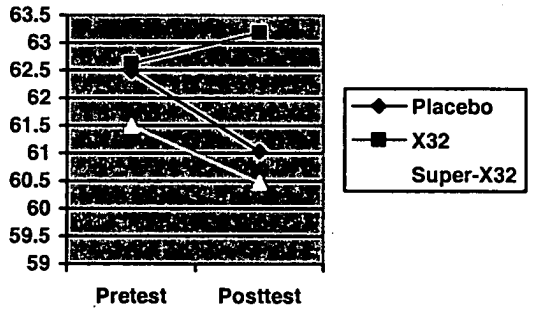
Normal ranges: There are no gender based normal values for this variable and as a result values between 12.0 14.6 percent are considered normal for both genders.

Interpretation of results: All mean values are within normal limits for each group at each time point for this data. There were no observed differences observed at baseline as measured by ANOVA. The Placebo group did decrease slightly from pretest to posttest however this decline was not significant. The X32 group declined significantly (p=0.039) and the Super-X32 group declined in a trend significant fashion (p=0.095). There is evidence of an affect of Product in this data however the lack of a significant difference at posttest (p=0.831) combined with all means being in normal range prevent a conclusive assessment.

Neutrophils:

Group	Pretest*	Posttest*	p-value
Placebo	62.48 ± 5.98	61.03 ± 5.79	0.221
X32	62.61 ± 6.54	63.17 ± 6.03	0.775
Super-X32	61.50 ± 7.23	60.47 ± 7.30	0.342
p-value	0.763	0.228	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



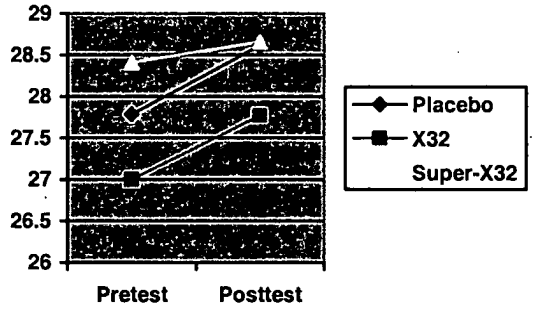
Normal ranges: There are no gender based normal values for this variable. Normal ranges are between 48 to 73 percent.

Interpretation of results: All observed mean values were within normal limits at each time point by product. There was not a significant difference at baseline (pretest) for this variable indicating a valid randomization. There were no significant changes observed for any group, and the differences seen are likely due to normal variation over time. There is no effect of Product indicated in this data.

Lymphocytes:

Group	Pretest*	Posttest*	p-value
Placebo	27.79 ± 5.77	28.61 ± 5.69	0.387
X32	27.00 ± 6.01	27.77 ± 4.90	0.266
Super-X32	28.41 ± 5.72	28.66 ± 6.00	0.752
p-value	0.633	0.781	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



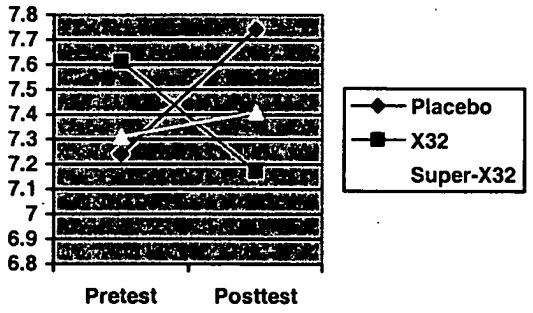
Normal ranges: There are no gender based normal limits for this variable. Normal ranges for these means are between 18 to 48 percent.

Interpretation of results: All mean values are within normal limits as tested. There were no observed differences from pretest to posttest for any group, although all groups did experience mean gains. The mean values at pretest were all equal indicating the value of the randomization procedures used. There is no visible or calculated effect of Product present in this data.

Monocytes:

Group	Pretest*	Posttest*	p-value
Placebo	7.24 ± 1.77	7.74 ± 1.44	0.196
X32	7.61 ± 1.94	7.17 ± 1.84	0.149
Super-X32	7.31 ± 1.93	7.41 ± 2.23	0.823
p-value	0.708	0.484	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



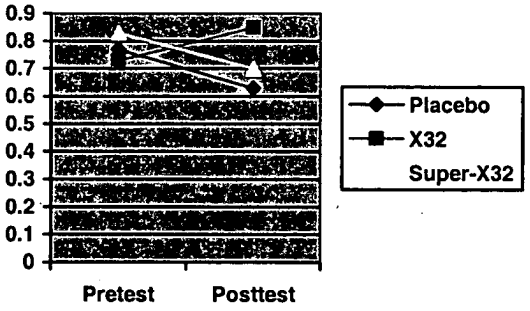
Normal ranges: There are no gender based normal values for this variable. Normal ranges for adults are between 0.0 to 9.0 percent.

Interpretation of results: All observed mean values are within the normal limits specified above. These values are at the upper end of the normal range. There were no significant differences observed for this data. And as can be seen from the plot and by close examination of the mean values there are no apparent trends in the data and all changes are interpreted to be normal variation from pretest to posttest. There is no effect of Product for this variable.

Basophiles:

Group	Pretest*	Posttest*	p-value
Placebo	0.77 ± 0.43	0.63 ± 0.58	1.000
X32	0.73 ± 0.46	0.85 ± 0.99	1.000
Super-X32	0.83 ± 0.39	0.70 ± 0.47	0.333
p-value	0.738	0.539	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



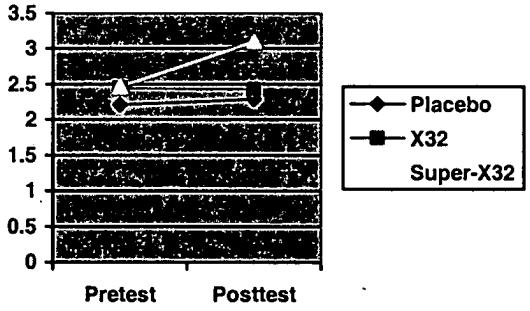
Normal ranges: There are no gender based normal ranges for this variable. Normal values are between 0.0 to 2.0 percent.

Interpretation of results: All observed means are within normal limits for this variable. Large standard deviations for these mean values has led to high p-values. And there is not likely to be adequate sample sizes to accurately assess this variable. There were no significant values in this data indicating no effect of Product use.

Eosinophil:

Group	Pretest*	Posttest*	p-value
Placebo	2.21 ± 1.19	2.29 ± 1.24	0.763
X32	2.45 ± 1.48	2.43 ± 1.48	0.690
Super-X32	2.47 ± 1.39	3.10 ± 2.61	0.142
p-value	0.696	0.204	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



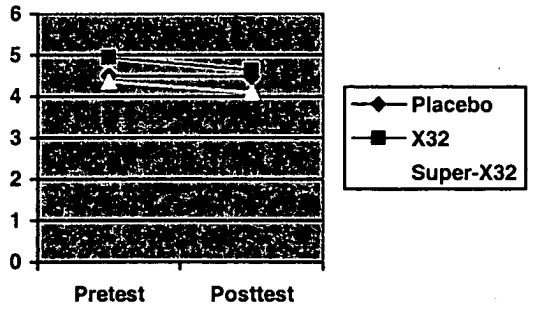
Normal ranges: Normal ranges for this variable to not differ by gender and are between 0-5 percent.

Interpretation of results: There were no observed significant differences for any group over time. There were also no differences between groups at pretest or posttest as measured by ANOVA. The observed differences are considered to be normal variation and there is no effect of Product on this variable. All mean values are within normal limits.

Absolute Value Neutrophils:

Group	Pretest*	Posttest*	p-value
Placebo	4.50 ± 1.35	4.48 ± 0.86	0.666
X32	4.95 ± 1.71	4.64 ± 1.30	0.121
Super-X32	4.36 ± 1.24	4.10 ± 1.49	0.217
p-value	0.249	0.216	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



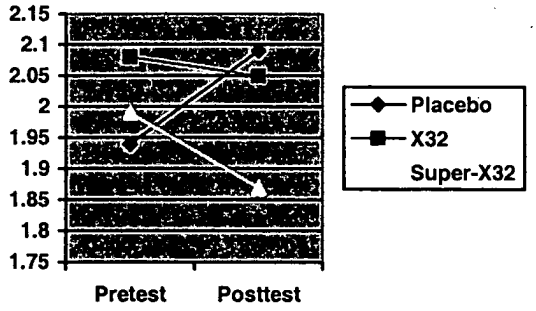
Normal ranges: There are no gender based difference for normal range determination for this variable. Normal ranges are between 2.4 to $7.6x10^3$/ul.

Interpretation of results: There were no observed significant differences observed for these mean values. ANOVA results demonstrated no significance at pretest or posttest. And there were no difference over time. All means did decreased slightly. There is no effect of Product for this variable.

Absolute Value Lymphocytes:

Group	Pretest*	Posttest*	p-value
Placebo	1.94 ± 0.52	2.09 ± 0.56	0.023
X32	2.08 ± 0.66	2.05 ± 0.59	0.566
Super-X32	1.99 ± 0.54	1.87 ± 0.51	0.096
p-value	0.601	0.255	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



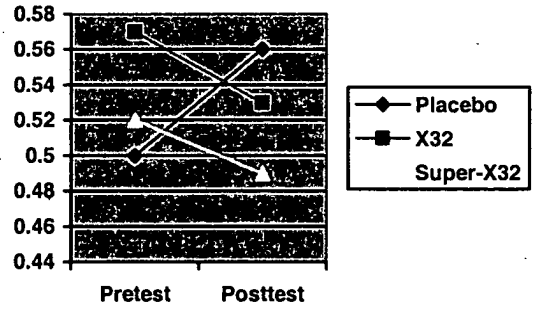
Normal ranges: There are no gender based normal values for this variable, and the range between 1.0 to $3.36x10^3$/ul are considered normal.

Interpretation of results: No differences wee noted by ANOVA at either pretest or posttest. There was a significant gain in the Placebo group and declines in the Product groups. This drop was trend significant in the Super-X32 group (p=0.096). The observed differences are likely effected by Product use, however based on the lack of significance at posttest the results are not conclusive. Further research would be needed to examine this relationship.

Absolute Value Monocytes:

Group	Pretest*	Posttest*	p-value
Placebo	0.50 ± 0.14	0.56 ± 0.12	0.006
X32	0.57 ± 0.16	0.53 ± 0.16	0.029
Super-X32	0.52 ± 0.16	0.49 ± 0.15	0.127
p-value	0.159	0.150	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



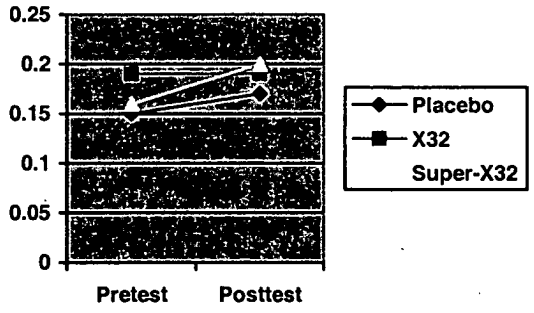
Normal ranges: There are gender based normal ranges for this variable. For Males, normal values are between 0.25 to 0.9x10^3/ul and Females are between 0.3 to 0. 9x10^3/ul.

Interpretation of results: All observed averages were within normal ranges regardless of gender. There was not a significant difference at pretest as measured by ANOVA. There was a significant increase in Placebo group means and a significant decline in the X32 group. These findings are difficult to interpret however the decline in values for the Product groups and the increase in the Placebo group are likely based on Product use. Even though there were differences over time, there were no differences observed between all three groups at posttest as measured by ANOVA. This finding prevents conclusive findings for this variable.

Absolute Value Eosinophils:

Group	Pretest*	Posttest*	p-value
Placebo	0.15 ± 0.10	0.17 ± 0.09	0.335
X32	0.19 ± 0.13	0.19 ± 0.13	0.979
Super-X32	0.16 ± 0.10	0.20 ± 0.16	0.044
p-value	0.410	0.739	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



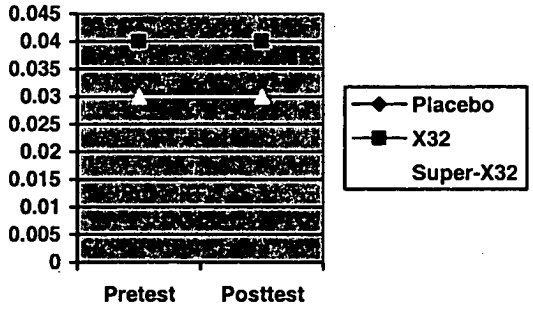
Normal ranges: There are no gender based normal ranges for this variable and all subjects should be between 0.0 to $0.4x10^3$/ul.

Interpretation of results: There were no differences at baseline for this data validating the randomization procedures. Both the Placebo and X32 groups did not change overtime, however the Super-X32 did demonstrate a statistically significant gain in mean values as determined by a p-value equal to 0.044. This gain with the lack of statistical difference at baseline indicates that there is likely an effect of Product for this group. However the lack of a posttest difference prevents this finding from being conclusive.

Absolute Value Basophiles:

Group	Pretest*	Posttest*	p-value
Placebo	0.04 ± 0.02	0.04 ± 0.02	0.556
X32	0.04 ± 0.02	0.04 ± 0.02	0.717
Super-X32	0.03 ± 0.01	0.03 ± 0.02	0.299
p-value	0.356	0.192	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



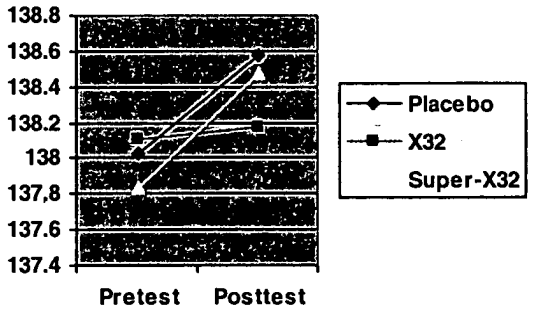
Normal ranges: There are no gender based values for this variable and normal ranges are between 0.0 to $0.1x10^3$/ul.

Interpretation of results: There were no demonstrated changes in these variables as all means stayed the same from pretest to posttest. There were also no observed differences at baseline (pretest) validating the randomization procedures. There is not evidence of a Product based difference in these data.

Sodium:

Group	Pretest*	Posttest*	p-value
Placebo	138.03 ± 1.47	138.58 ±1.98	0.126
X32	138.10 ± 1.64	138.17 ± 1.56	0.732
Super-X32	137.84 ± 1.79	138.47 ± 1.74	0.110
p-value	0.812	0.642	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



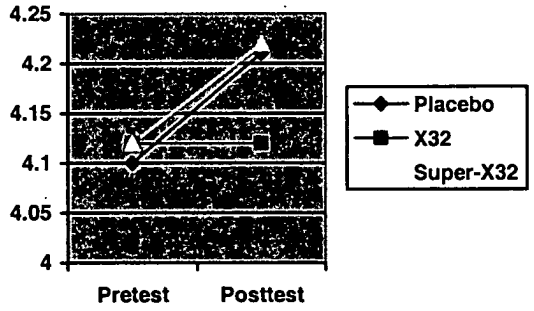
Normal ranges: Serum levels for Sodium are not dependent on gender. Values of 135-148 mEq/L are considered normal.

Interpretation of results: All values increased from pretest to posttest but none were significantly changed. All observed values were within normal limits, and there were no significant differences observed between groups at pretest or posttest by ANOVA. It is determined that the observed changes are normal variation and there is not an effect of the Product on this variable.

Potassium:

Group	Pretest*	Posttest*	p-value
Placebo	4.10 ± 0.25	4.21 ± 0.35	0.126
X32	4.12 ± 0.27	4.12 ± 0.35	0.955
Super-X32	4.12 ± 0.35	4.22 ± 0.32	0.087
p-value	0.968	0.419	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



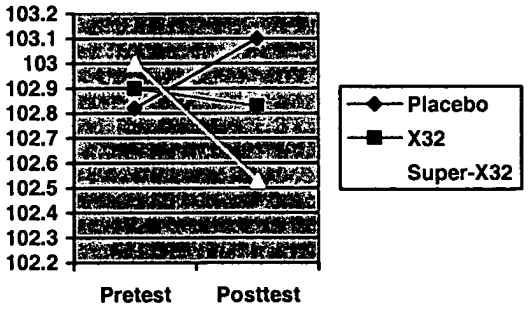
Normal ranges: There are age range normal values but not gender based normal values. Serum based values for subjects greater than 16 years of age must be between 3.3-5.3 mEq/L.

Interpretation of results: There was an observed trend significance (increase) for the Super-X32 group and non-significant changes in Placebo and X32. There were no observed differences in pretest or posttest values as determined by ANOVA. Based on these findings it is determined that there is no impact of the Product on Potassium levels.

Chloride:

Group	Pretest*	Posttest*	p-value
Placebo	102.82 ± 1.91	103.10 ± 1.90	0.499
X32	102.90 ± 2.27	102.83 ± 2.20	0.949
Super-X32	103.00 ± 1.84	102.53 ± 2.06	0.290
p-value	0.937	0.553	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



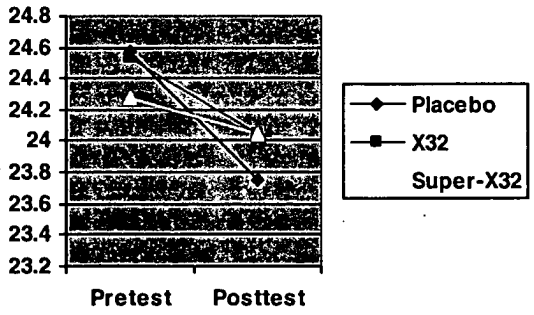
Normal ranges: There are no gender based normal values and serum levels between 96-109 mEq/L are considered normal Chloride values.

Interpretation of results: All observed values were within normal limits at each time point. There were no significant differences on any measure, therefore the observed changes are assumed to be random variation over time. The increases and decreases can not be linked to Product and it is assumed there is no effect.

CO_2:

Group	Pretest*	Posttest*	p-value
Placebo	24.57 ± 3.88	23.75 ± 4.60	0.487
X32	24.53 ± 3.53	24.05 ± 4.42	0.480
Super-X32	24.27 ± 2.93	24.05 ± 4.24	0.696
p-value	0.934	0.954	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



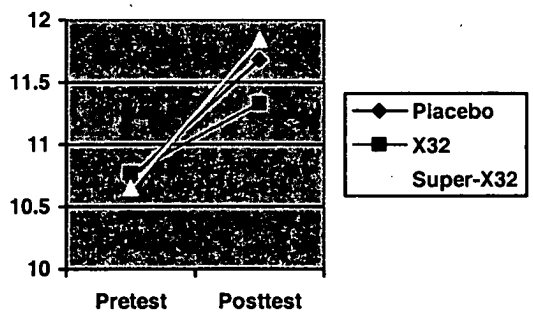
Normal ranges: Serum levels between 22-33 mEq/L are considered normal and there are no gender based criteria. These values apply to both genders.

Interpretation of results: All observed values for pretest and posttest are within the normal bounds cited above. All values decreased from pretest to posttest but none significantly. There were no observed differences, as determined by ANOVA at pretest or posttest. All observed changes are interpreted to be normal variation. There is no effect of product on this variable.

Anion Gap:

Group	Pretest*	Posttest*	p-value
Placebo	10.73 ± 3.43	11.68 ± 4.55	0.381
X32	10.77 ± 3.18	11.33 ± 3.61	0.445
Super-X32	10.65 ± 2.63	11.84 ± 3.90	0.071
p-value	0.986	0.880	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



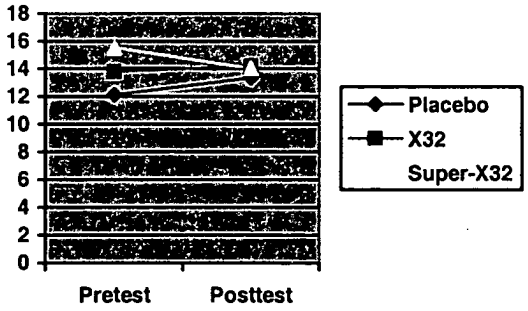
Normal ranges: There are no gender based differences in normal values for this variable, normal ranges are between 4.0 to 14.0.

Interpretation of results: There were no observed significances for any variable over time. There was a trend increase in Super-X32 (p=0.071) between pretest and posttest. There was not a significant difference in pretest or posttest means. Since all groups increased at approximately the same rate regardless of Product use there is no evidence of any product effect in this data.

BUN (Urea Nitrogen):

Group	Pretest*	Posttest*	p-value
Placebo	12.12 ± 3.05	13.35 ± 3.71	0.079
X32	13.81 ± 3.95	14.20 ± 5.26	0.558
Super-X32	15.52 ± 4.66	14.03 ± 3.45	0.021
p-value	0.004	0.706	
Post-Hoc	Placebo versus Super-X32 (p=0.004)	N/A	

*Values are expressed as Mean ± Standard Deviation.



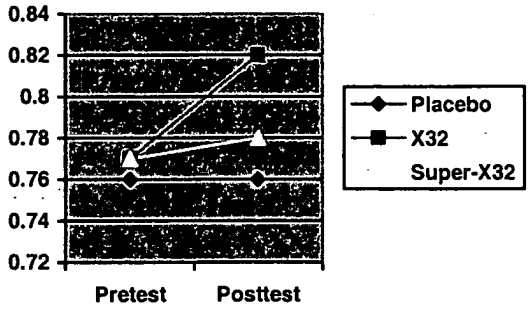
Normal ranges: There are no gender or age range values cited. The normal limits are 10-26 mg/dL.

Interpretation of results: First, all observed values across three groups and two time points were within normal limits. Secondly there was a significant difference at pretest between Super-X32 and Placebo groups as measured by ANOVA (as determined by significant omnibus test p=0.004, and post-hoc comparison p<0.05). Lastly, there were observed differences over time for Super-X32 (decrease p=0.021) and Placebo (trend increase, p=0.079) this is difficult to interpret based on the difference between these variables at baseline. The key to interpretation is the non-significant difference between groups at posttest. This finding indicates that the observed differences are likely due to simple regression artifact as values migrate towards a 'population' average. I interpret this data as no effect of product and the changes as normal variation.

Creatinine:

Group	Pretest*	Posttest*	p-value
Placebo	0.76 ± 0.13	0.76 ± 0.13	0.669
X32	0.77 ± 0.13	0.82 ± 0.16	0.032
Super-X32	0.77 ± 0.15	0.78 ± 0.16	0.465
p-value	0.910	0.232	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



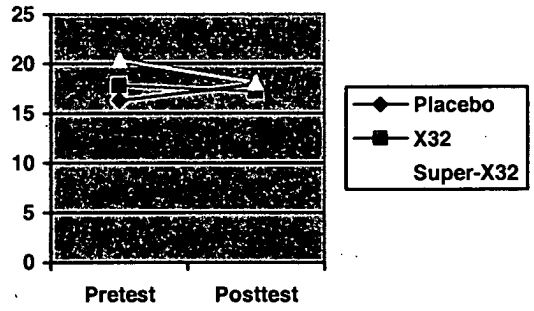
Normal ranges: While there are urine based different ranges by gender there are not serum based differences by gender. The normal values for this test (for those over 14 years of age) are 0.7-1.5 mg/dL.

Interpretation of results: All observed averages were within normal limits for each time point and group. There were no significant differences at pretest or posttest between groups. There was a significant increase in X32 Creatinine level (p=0.032). Based on the consistency of all observed means and standard deviations I conclude that there is likely a positive effect of the X32 product increasing serum Creatinine levels. Notice that the Placebo group value did not change from pretest to posttest. This finding along with the significant increase in X32 product, and increase in Super-X32 product were used in this decision.

BUN/Creatinine Ratio:

Group	Pretest*	Posttest*	p-value
Placebo	16.32 ± 4.53	17.92 ± 5.10	0.165
X32	17.81 ± 4.48	17.21 ± 5.92	0.424
Super-X32	20.36 ± 4.99	18.10 ± 4.32	0.025
p-value	0.003	0.772	
Post-Hoc	Placebo versus Super-X32 (p=0.004)	N/A	

*Values are expressed as Mean ± Standard Deviation.



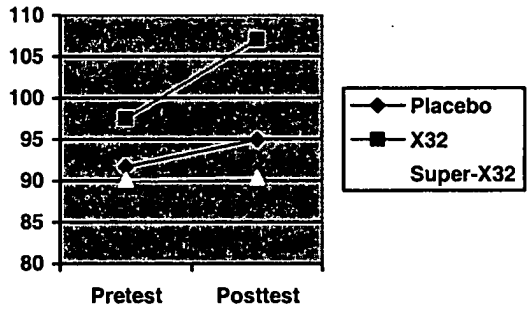
Normal ranges: There are no variations based on gender and normal values are calculated to be within 6.0 to 25.0 for this ratio.

Interpretation of results: All observed averages were within normal limits for pretest and posttest. There was a significant baseline difference between Placebo and Super-X32 (p=0.004) and there was a significant decline in the Super-X32 group. As the figure illustrates, it would appear that the changes are centralized around the posttest average and the differences appear to be due to regression artifact. There is no evidence of Product effect in this data based on the baseline (pretest) difference.

Glucose:

Group	Pretest*	Posttest*	p-value
Placebo	91.70 ± 10.80	94.97 ± 17.96	0.330
X32	97.52 ± 29.22	107.07 ± 21.67	0.027
Super-X32	90.16 ± 10.71	90.44 ± 9.31	0.878
p-value	0.273	0.001	
Post-Hoc	N/A	X32 versus Placebo (p=0.025) X-32 versus Super-X32 (p=0.001)	

*Values are expressed as Mean ± Standard Deviation.



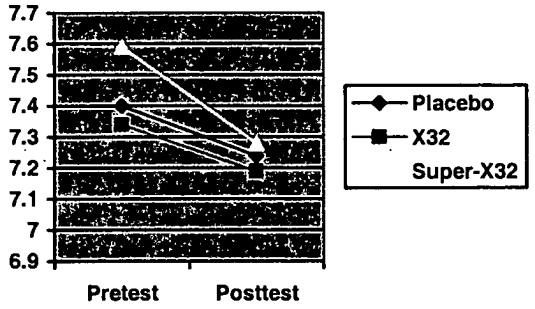
Normal ranges: There are no gender based differences for Serum Glucose and normal values for those subjects with ages 16 and older is 70-140 mg/dL.

Interpretation of results: All observed averages for each time point were within normal limits. There was not a significant difference at baseline for this variable. Super-X32 and Placebo group maintained consistent Glucose levels over time, increasing slightly but not statistically. The X32 group demonstrated a significant, within normal limit increase. This finding is relevant statistically because the mean for the X32 group at pretest was above Super-X32 and Placebo yet there was still a significant gain. This is not likely to occur and leads me to the conclusion that the X32 product statistically increases Glucose level by approximately 10 mg/dL.

Total Protein:

Group	Pretest*	Posttest*	p-value
Placebo	7.40 ± 0.38	7.24 ± 0.41	0.018
X32	7.34 ± 0.31	7.19 ± 0.50	0.057
Super-X32	7.59 ± 0.37	7.28 ± 0.70	<0.001
p-value	0.020	0.809	
Post-Hoc	X32 versus Super-X32 (p=0.028)	N/A	

*Values are expressed as Mean ± Standard Deviation.



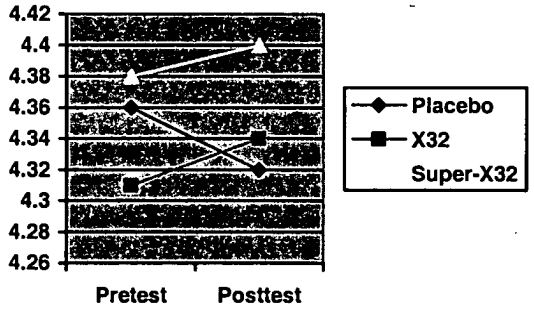
Normal ranges: There are no gender based normal values specified. For subjects aged greater than 16 years normal values are 6.0-8.5 g/dL.

Interpretation of results: All observed means for each time point are well within normal limits for each group. There was a significant difference in baseline (pretest) values between X32 and Super-X32 groups. The Placebo arm was not different from either group at baseline. It is interesting that all group differences disappeared at posttest as indicated by a p-value of 0.809. Within group values were also interesting in that all groups demonstrated decreases. Two groups significantly so (Placebo p=0.018 and Super-X32 p<0.001) with a trend decrease in X32 (p=0.057). Based on these decreases and the significant difference at baseline, I conclude no effects of Product on Total Protein are indicated.

Albumin:

Group	Pretest*	Posttest*	p-value
Placebo	4.36 ± 0.25	4.32 ± 0.27	0.281
X32	4.31 ± 0.28	4.34 ± 0.35	0.432
Super-X32	4.38 ± 0.25	4.40 ± 0.24	0.919
p-value	0.551	0.551	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



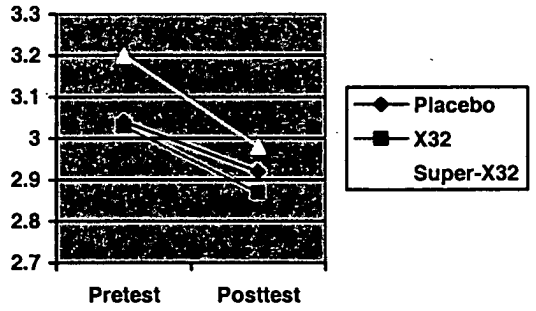
Normal ranges: There are no gender based differences in normal levels for Serum Albumin. The values for persons greater than three years of age are 3.0-5.5 g/dL.

Interpretation of results: All observations for all groups at each time point were well within normal range. There were no observed differences in this statistical model which indicates that changes in values are likely to be due to normal variation. It is interesting however that while the Placebo group saw a decline in Albumin, both the X32 and Super-X32 group experienced gains. While there is no direct statistical evidence of a positive effect of Product on Albumin, the data indicate that one may be present and a larger trial may be important here.

Globulin:

Group	Pretest*	Posttest*	p-value
Placebo	3.04 ± 0.24	2.92 ± 0.27	0.012
X32	3.03 ± 0.23	2.87 ± 0.34	0.004
Super-X32	3.20 ± 0.36	2.98 ± 0.36	<0.001
p-value	0.028	0.428	
Post-Hoc	Super-X32 versus Placebo (p=0.073) Super-X32 versus X32 (p=0.057)	N/A	

*Values are expressed as Mean ± Standard Deviation.



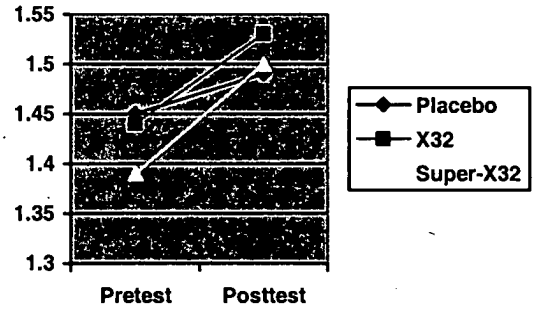
Normal ranges: There are no gender based differences for interpretation of normal levels. Therefore the normal values are between 2.2 and 4.2 g/dL.

Interpretation of results: Interesting findings for this variable. There was a significant difference at pretest based on the ANOVA test. This difference was between the Super-X32 average and both Placebo and X32 means. This difference disappeared at posttest. All groups experienced significant declines in this variable (all $p<0.05$). Based on these declines and the non-equivalence finding at pretest, there is no evidence of an effect due to Product on these data.

Albumin/Globulin ratio:

Group	Pretest*	Posttest*	p-value
Placebo	1.45 ± 0.12	1.49 ± 0.17	0.057
X32	1.44 ± 0.15	1.53 ± 0.22	0.006
Super-X32	1.39 ± 0.20	1.50 ± 0.19	<0.001
p-value	0.296	0.740	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



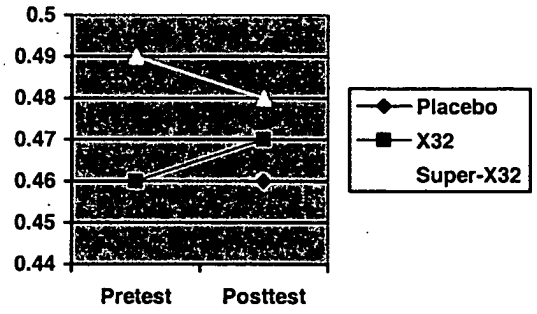
Normal ranges: There are no gender based differences for this variable. The normal range is 0.8 to 2.0 for this variable.

Interpretation of results: All observed averages were within normal limits for this variable. There was not a significant difference at baseline, validating the randomization procedures. All three groups demonstrated increases over time. This difference was trend significant for the Placebo group and highly significant for the X32 and Super-X32 groups. However there was not a significant difference at posttest for the groups based on ANOVA. This finding keeps the results from being conclusive of a positive effect of Product. However there is evidence of a possible effect of Product in these data. More research would be needed to be certain of these findings.

Bilirubin:

Group	Pretest*	Posttest*	p-value
Placebo	0.46 ± 0.18	0.46 ± 0.20	0.803
X32	0.46 ± 0.24	0.47 ± 0.23	0.683
Super-X32	0.49 ± 0.22	0.48 ± 0.17	0.938
p-value	0.832	0.892	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



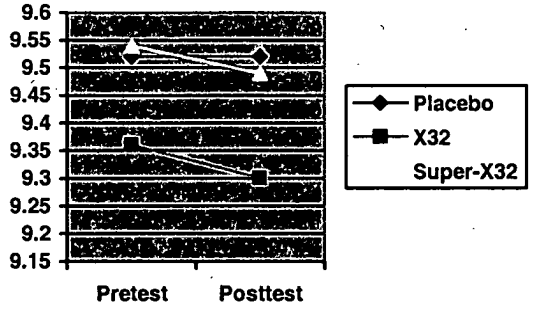
Normal ranges: Total Bilirubin normal values become fixed after seven days of life and should be between 0.2-1.2 mg/dL. There are no variations by gender.

Interpretation of results: All observed averages were within the normal ranges specified above for each group across both time points. There were no significant differences observed either within group or between groups as measured by ANOVA. All changes in values are then determined to be normal variation. There is no observed effect of Product for this variable.

Calcium:

Group	Pretest*	Posttest*	p-value
Placebo	9.52 ± 0.63	9.52 ± 0.67	0.785
X32	9.36 ± 0.37	9.30 ± 0.43	0.675
Super-X32	9.54 ± 0.47	9.49 ± 0.41	0.514
p-value	0.304	0.194	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



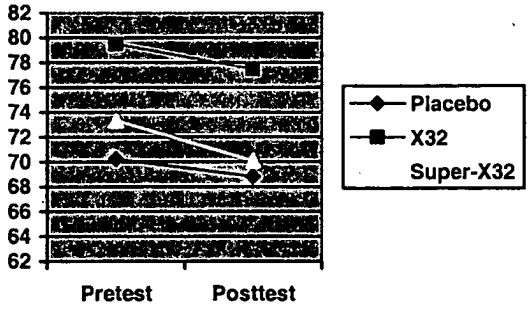
Normal ranges: Serum levels considered normal after day 15 of life are between 8.5-10.5 mg/dL. There are no variation values based on gender.

Interpretation of results: There were no observed significant differences for any group at any time point. There were also no differences between groups at pretest or posttest. Based on these findings it is determined the changes are due to normal variation and the Product has no effect on this variable.

Alkaline Phosphatase:

Group	Pretest*	Posttest*	p-value
Placebo	70.24 ± 19.96	68.81 ± 18.20	0.857
X32	79.52 ± 22.59	77.50 ± 23.91	0.199
Super-X32	73.33 ± 18.37	70.09 ± 17.24	0.007
p-value	0.188	0.191	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



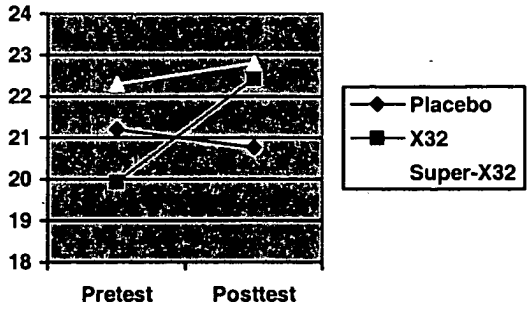
Normal ranges: There are no gender based differences for normal range interpretation. For humans aged greater than15 years the normal values should be between 30-136 U/L.

Interpretation of results: All observed averages were well within normal range for all groups at both time points. All three groups experience a decline from pretest to posttest. This reached a statistically different level for the Super-X32 group (p=0.007). There were no differences between groups at baseline (pretest) or posttest. I find no evidence of Product effect for this data.

AST:

Group	Pretest*	Posttest*	p-value
Placebo	21.21 ± 7.04	20.77 ± 5.68	0.752
X32	19.94 ± 5.45	22.43 ± 11.18	0.102
Super-X32	22.31 ± 5.95	22.81 ± 6.42	0.467
p-value	0.337	0.577	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



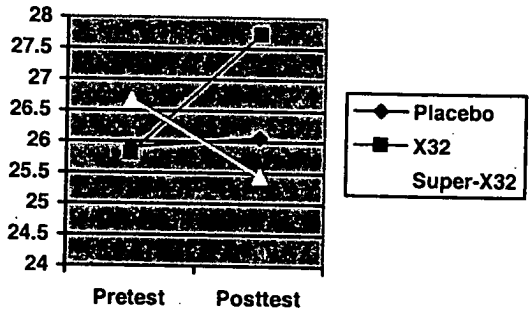
Normal ranges: No differences in normal values are based on gender. Normal values for humans aged 17 and older are 0-39 U/L.

Interpretation of results: All observed averages were well within normal range for all groups at both time points. There were no significant differences observed for any group over time, nor were there any between group differences at pretest or posttest as measured by ANOVA. It is interesting to note the both X32 and Super-X32 average values increased over time with the Placebo average decreased. While this was not statistically significant it may be an indication of an undetected relationship. This variable could be studied further in an additional study.

ALT:

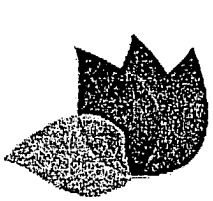
Group	Pretest*	Posttest*	p-value
Placebo	25.91 ± 14.59	26.06 ± 14.99	0.781
X32	25.81 ± 10.73	27.73 ± 15.82	0.241
Super-X32	26.67 ± 12.87	25.45 ± 8.19	0.455
p-value	0.960	0.791	
Post-Hoc	N/A	N/A	

*Values are expressed as Mean ± Standard Deviation.



Normal ranges: No differences by gender are noted for normal values, nor are there any age limitations. Normal values are between 5-43 U/L.

Interpretation of results: All observed means are within the normal ranges specified above. There were no observed significant differences within group or between groups. The variable changes are taken to indicate normal variation present in the data. There is no effect of Product for this variable.



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STANDARD OPERATING PROCEDURES (SOP)
APRIL 21, 2004

1. TABLE OF CONTENTS

TABLES

2. AUTHORITY AND ACCOUNTABILITY

The information contained in these standard operating procedures governs and guides the actions of all officers and employees of this organization.

Marshall-Blum is a research entity and not a medical facility. As such, all study participants are voluntary research subjects (subjects) and not medical patients (patients). Physicians are referred to as investigators so that subjects are not lead to believe that medical care is being provided.

2.1. Company Structure

Marshall-Blum is the parent company that operates the Herbal Research Clinic. The entity of the Herbal Research Clinic was created in order to address identity concerns over the name Marshall-Blum. The name Marshall-Blum was determined to imply a law firm or an accounting firm; not a company dedicated to conducting clinical trials primarily on dietary supplements.

Marshall-Blum was originally created to conduct medical research including continuous quality improvement projects but that now makes up a very minor percentage of our business.

Marshall-Blum has three owners. James M. Blum controls the majority (85%) while Felix Hernandez, MD owns 10% and Ronald Blum, MD (no relation) owns the remaining 5%.

Marshall-Blum's legal entity is Healthcare Choreography, a Limited Liability Corporation incorporated in the State of Maine.

James M. Blum, Ph.D. is the chief executive officer (CEO).

Dr. Hernandez is a practicing cardiac surgeon at the Eastern Maine Medical Center (EMMC). He has been a cardiac surgeon since 1987 and has helped pioneer Off-Pump surgical techniques. He and Jim Blum are both active members of the Northern New England Cardiovascular Research Group (NNECVRG).

Dr. Ronald Blum is a practicing family physician and the Medical Director of Marshall-Blum. As the medical director, he is responsible for overseeing the research staff including consults on inclusion criteria, exclusion criteria, laboratory results, and adverse events.

Additional information is available on our website at URL: http://www.marshallblum.com .

2.2. The Research Staff

Mary Dunham, RN, ONC is the lead research staff member. Her duties include:

- The oversight of all nursing functions;
- Communications with Ronald Blum, M.D. on compliance with inclusion and exclusion criteria as necessary;
- Weekly review of all subject charts for completeness and accuracy;
- Attain informed consent;
- Perform subject visits.

Terry Cutshall, LPN and Harriet Eddy, LPN are research staff members. Their duties include:

- Attain informed consent;
- Perform subject visits.

Sarah Huff is the office receptionist.

All RNs and LPNs work under Ronald Blum M.D.

2.3. The Administrative Staff

Tristan Rushton is the Clinical Trials Coordinator and Human Protections Administrator responsible for the safety of all human subjects, regulatory preparation and oversight, and the day-to-day functions of the clinic.

Andrea Burke is a Research Assistant to Tristan Rushton.

Herb LeBreton is the Database Coordinator and advertising specialist.

Carol Gallupe is the Quality Control Specialist and prepares assigned product.

Cole Rushton is a Data Entry Clerk and handles miscellaneous administrative tasks.

3. HUMAN SUBJECT PROTECTION

Marshall-Blum's Human Protections Administrator is Tristan R. Rushton. An Institutional Review Board (IRB) reviews all appropriate clinical trial documentation in order to safeguard the rights, safety, and well being of the subjects. Every clinical trial's protocol, informed consent form, written information given to the subjects, safety updates, annual progress reports, and any revisions to these documents are provided to an IRB for review.

All protocols must receive approval from an IRB. Protocols are subject to change after review by an IRB to ensure human subject protection in clinical research. Marshall-Blum conducts clinical trials in compliance with the approved protocols. Modifications to the protocols are not made without written IRB approval except when the modification is

needed to eliminate an immediate hazard(s) to subjects or if the change(s) involve only logistical or administrative aspects of the clinical trials. Any departures from the protocols are fully documented in the source documentation.

The research staff are trained in the basic elements of human subject protection. Copies of important documents governing the protection of human subjects such as The Common Rule, The Belmont Report and the Declaration of Helsinki are available to clinical trial sponsors and subjects upon request and are free of charge by contacting Marshall-Blum's Human Protections Administrator. As of April 12, 2004, these documents can also be accessed from the following websites:

- The Common Rule is available at http://ohrp.osophs.dhhs.gov/humansubjects/guidance/45cfr46.htm
- The Belmont Report is available at http://ohrp.osophs.dhhs.gov/humansubjects/guidance/belmont.htm
- Declaration of Helsinki is available at http://www.wma.net/e/policy/b3.html

4. INFORMED CONSENT

After a clinical trial is fully explained, written informed consent is obtained from all subjects prior to clinical trial participation. The method of obtaining and documenting the informed consent and the contents of the consent complies with Good Clinical Practices (GCP) and all applicable regulatory requirements.

Obtaining informed consent includes a review of:

- The purpose of the research and study design. A discussion that scientific decisions are based on randomized clinical trial results. Defining the following terms and concepts: prospective, randomization, parallel-group or cross-over, placebo, end-points, inclusions and exclusions, masking, confidentiality, and IRB. Describing the roles that each person plays at the Clinic.
- Randomization. Thorough discussion about randomization and explaining the probability of being randomized to the placebo group. It is explained that one aspect of research is assessing the placebo effect.
- What will happen during the trial. Specific descriptions of all of the various events that will take place and the various forms that will need to be completed. If the subject needs to go to the lab, the lab procedure is also described.
- Human subject protection. Discussion of what human subject protection means and the history behind it.
- Contact information. Review of phone numbers for the principal investigator, human protections administrator, research staff, and the IRB.
- The voluntary nature of participation. Informing each potential subject that participation is strictly voluntary and if they wish to withdraw, they have the right to do so without penalty. In cases of withdrawal, the subject is asked to voluntarily call the clinic so that their decision and reason can be documented.

- Risks. Discussion of the importance of reporting any adverse events or side effects during the study, even if it appears that they are unrelated to the trial so that the research staff can document, make a determination, and take appropriate action if necessary.
- What happens in case of an injury. Provisions are not made for injuries directly related to the trial. Each company carries product liability insurance; help is provided, as appropriate, to resolve any issues in a fair manner.
- Completion of the trial. Defined and described so that expectations are clearly established. For example, there are x number of clinic visits and that completion occurs after all information is received by the research staff. Compensation for completing the trial will be dispensed at the last visit.
- Any and all questions asked by each potential subject.
- Ability to consent. Through this consent process the research staff member evaluates a potential subject's ability to consent.

After all questions are answered, it is determined that the potential subject has the ability to consent, and that the potential subject voluntarily consents, two consent forms are signed.

5. PRODUCT LIABILITY INSURANCE

The sponsor is required to meet the liability insurance requirements listed below for the product(s) being tested as outlined in the final version of the protocol from IRB approval to 1 year after IRB closure.

Using an "ACORD™ Certificate of Liability Insurance" the required information includes:

1. Commercial General Liability
2. Limits
    a. Each Occurrence – A minimum of $1,000,000.00
    b. General Aggregate – A minimum of $2,000,000.00
    c. Products: Comp/Op Agg – A minimum of $1,000,000.00
3. Certificate Holder and Additional Insured –
    a. Healthcare Choreography LLC
    Attn: Tristan Rushton
    268 State St
    Bangor, ME 04401
    (207) 990-4963
4. Description of Operations…
    a. "Re: (*product name/sponsor*)"
    b. "Certificate holder is named as an additional insured with respect to the products sold or distributed by the named insured."
5. Cancellation –
    a. 30-day notice (minimum)*
    b. *10-day notice of cancellation in the event of non-payment

Healthcare Choreography is the parent company of Marshall-Blum LLC and Herbal Research Clinic of Bangor, Maine.

Proof of the above insurance is required to be on file at the offices of Marshall-Blum LLC before the enrollment of the first subject. Marshall-Blum LLC must approve any cancellation or change in this policy in writing before any cancellation or change is made. Failure to do so will result in the sponsor accepting full liability for any and all expenses (legal, medical, and any others) incurred as a result of this breach. Any lapse in coverage will be handled in the same manner and have the same impact as a cancellation of coverage.

All associated costs of this requirement rest solely with the sponsor.

6. COMPENSATION

6.1 Service Compensation

All services are budgeted at cost-plus.

6.2 Bonuses

No investigator, coordinator, or recruitment bonuses are budgeted or paid because they are a potential conflict of interest.

6.3 Subject Compensation

Compensation for a subject's time and effort related to their participation in a clinical trial is standard. Compensation generally includes a cash payment dependent on the study requirements. In general, a cash payment of $100 is used for a study of approximately 8 weeks in duration where no time or testing intensive visits are required. Time and testing intensive visits include such items as laboratory testing, efficacy testing with specialized equipment, photographs, etc....

This level of compensation is reasonable with respect to the requirements to complete any given clinical trial. This amount does not unduly influence subject responses.

Specifically, this amount is not enough money to be considered a source of income on which to live. It is large enough that individual subjects may purchase some item or pay an outstanding bill that may aid their financial situation that they could not otherwise afford. Generally, we hear comments that indicate that this is to be used as discretionary money to afford a meal out or some other such purchase.

On occasion, higher amounts have been used with IRB approval. On these occasions, the commitment of the subject exceeded the normal amount of time and effort that is described above.

If a subject completes a minimum of 1 follow-up visit, but cannot or does not complete the study, they are compensated in the amount of $25.

7. ASSIGNED PRODUCT ACCOUNTABILITY

We maintain assigned product (active product and placebo) accountability records for all clinical trials. Records of the assigned product dispensed to subjects are maintained. Subjects are asked to return their assigned product container and any unused assigned product to Marshall-Blum. Records of unused assigned product returned by the subjects are maintained. Compliance with assigned product consumption requirements are assessed through assigned product accountability records and self-reporting compliance questions.

8. PRIVACY AND CONFIDENTIALITY

All staff is informed about the need for confidentiality when they are hired and on a regular basis thereafter. Files containing subjects' information are maintained in locked file cabinets in the nurses' office.

Within the clinic, personal identifiers that may be used include but are not limited to:

- names;
- all geographic subdivisions smaller than a state;
- all elements of dates (except year) for dates directly related to an individual, including birth date, admission date, discharge date, date of death, etc.;
- telephone numbers;
- fax numbers;
- electronic mail (e-mail) addresses;
- social security numbers;
- medical record numbers;
- health plan beneficiary numbers;
- account numbers;
- certificate/license numbers;
- vehicle identifiers and serial numbers, including license plate numbers;
- device identifiers and serial numbers;
- web Universal Resource Locators;
- Internet Protocol (IP) address numbers;
- biometric indicators, including finger and voice prints;
- Full face photographic images and any comparable images;
- Any other unique identifying number, characteristic, or code, or anything else that might reasonably provide identification.

Within the clinic, during the active portion of the study, files are identified by subject identification number and then verified by subject name. When released to third parties, all personal identifiers are removed so that subject records are identifiable by subject identification number only.

Sensitive personal information is requested in accordance with the process outlined in the Consent Form and the Intake Call Script. If a potential subject does not agree/continue:

- Prior to providing contact information, their Intake Form is shredded.
- After providing contact information but prior to completing the informed consent process, the Intake Form is documented on and filed as a "Drop No-ID" to provide a count of potential volunteers only. This file is maintained with the completed study files and is protected to the same extent.
- After completing the consent process, their reason for discontinuation is documented with a Drop Form mailed to the sponsor within 10 business days and their files are maintained to the same extent as subjects who go on to complete the study (SAEs are reported to the sponsor and IRB within 5 business days).

Non-eligible volunteers are handled according to the amount of information provided and not their eligibility status.

Marshall-Blum will grant monitor(s) and auditor(s) from the United States Department of Health and Human Services (DHHS), the United States Food and Drug Administration (FDA), and other federal or state governmental agencies, the IRB, and the study sponsor(s) access to subject records to verify data and to audit the data collection process. Unless ordered, none of these agencies will be able to copy identifiable records; they can have records identified by subject identification number only. Subject confidentiality will be maintained and will not be made publicly available to the extent permitted by the applicable laws and regulations.

9. RANDOMIZATION

The randomization lists are generated from a randomization scheme by a standard statistical method as defined by Meinert in pre-designated blocks (1). The randomization schemes are catalogued. A subject is assigned at a pre-designated visit defined in the protocol to the next available identification number from the randomization list. Each subject's assigned product is prepared according to the masked randomization list.

The randomization code book is prepared, maintained, and accessable by the clinical trials coordinator, the clinical trials coordinator assistant, and the person charged with preparing assigned product.

10. PRODUCT AND PLACEBO

The product and its look-alike placebo are provided for all clinical trials by the study sponsor. The product and placebo are provided in identical packaging. The placebo must appear the same as the product. Active product and placebo for a clinical trial must be provided from single batches (single product batch and single placebo batch). A certificate of analysis provided by the sponsor for the active product is on file at Marshall-Blum and is available on request. The product manufacturer has the sources of the individual ingredients on file in accordance with good manufacturing practices (GMP).

One bottle of active product is held at Marshall-Blum for future potential product composition verification. Costs associated with any and all product composition verification are the responsibility of the requesting entity and/or study sponsor. Marshall-Blum is not responsible for product composition verification costs under any circumstances. One bottle of the active product will be preserved as long as clinical trial records are preserved (see Documentation).

The placebo must pass the "straight face test". This includes:

- Looking, appearing, and tasting as identical to the product as is practically possible;
- Passing as a product in a systematic fashion.

Both the product and placebo are tested for their ability to dissolve in a simulated stomach acid environment within a 45-minute timeframe using minimal agitation to allow optimal potential bioavailability, when applicable.

If the product and placebo fail to meet any of these criteria they must be replaced at the sponsor's expense and the replacements must meet these criteria before a trial may begin.

11. PRODUCT AND PLACEBO INGREDIENT RESEARCH

For each ingredient in the product and placebo, due diligence research is performed. The main source for information is peer-reviewed journal articles obtained from the University of Maine research databases. Other peer-reviewed articles are obtained from internet article search engines. Reference books are also used. All ingredient-specific information is included in a Product / Placebo Formulation Due Diligence (PFDD) document. The PFDD is included as an appendix to the clinical trial protocol for submission to the IRB; a copy is also provided to the study sponsor and to research staff. Copies are provided to study participants or potential study participants upon request. The information for each ingredient included in a PFDD may include:

- Various names of the ingredient (common, scientific, slang);
- Where the ingredient comes from (i.e. a plant or animal source; if a plant, where it is native to);
- Medicinal, traditional, and commercial uses of the ingredient;

- Mechanism(s) of action of the ingredient in the human body (if known);
- Results of any *in vitro*, *in vivo*, human, or animal trials of the ingredient;
- Dosage information (RDA if applicable, common and toxic dosages, dosage forms);
- Cautionary or exclusionary medical conditions involved with the ingredient's use;
- Potential drug, dietary supplement, cosmetic, or other interactions with the ingredient;
- Potential side effects of ingredient use.

Often, limited information is available for certain ingredients. We extensively research for ingredient-specific information and include all reputable information we locate. If we cannot locate all of the abovementioned information on a specific ingredient, we state in the PFDD that limited information is available for the particular ingredient.

12. PRODUCT AND PLACEBO TOLERABILITY

Tolerability in the context of safety is a nurse's assessment of the number and degree of adverse events experienced and is not a measure of palatability.

Product / placebo tolerability for each clinical trial is defined by a registered nurse assessment as:

- "Not tolerable" is the experience of an adverse event(s), probably or definitely related to the product, directly resulting in the subject discontinuing use or being asked to discontinue use of the product, in which case the subject is dropped from the study.
- "Low tolerability" is the experience of an adverse event(s), probably or definitely related to the product, which causes moderate discomfort to the subject but is outweighed by the potential/experienced benefits so that it does not discontinue the subject from the study.
- "Moderate tolerability" is the experience of an adverse event(s), probably or definitely related to the product, which causes minimal discomfort to the subject but is outweighed by the potential/experienced benefits so that it does not discontinue the subject from the study.
- "High tolerability" is no adverse event experience probably or definitely related to the product.

Tolerability is rated at each visit using the Research Staff Evaluation Form and is included in analysis as a safety endpoint.

13. EXERCISE AND FOOD INTAKE PARAMETERS

Food intake compliance is defined according to each study's requirements. When diet recommendations are used in a study protocol, compliance is based on eating pattern changes discussed and agreed to by the subject and the nurse. Where diet is to be maintained throughout the study, compliance is based on how well subjects were able to maintain their normal food intake levels.

The purpose of diet recommendations is to allow flexibility for subjects to make practical and permanent lifestyle changes through encouragement and not requirement. In consultation with dietician Lori Kaley and our medical director, Dr. Ronald Blum, a non-calorie restricted, low-saturated fat and low-refined food diet, facilitated through gradual eating lifestyle changes was determined to be the most preferable form of "dieting" with respect to diet sustainability, health, and overall weight loss amounts. We recognize that calorie-restricted diets have been used in many weight management studies. However, some experts question this approach as impractical and unsustainable over the long-term. As a result, the diet approach in our studies has been designed and modified to specifically promote practical and permanent healthy weight management through encouraging subjects to make healthy diet choices but not requiring compliance with diet modifications that are unattainable due to will power or monetary cost.

13.1 Food Intake

When food intake guidelines are used, the following are the recommendations made unless otherwise noted in the protocol.

13.1.1 Diet Recommendations

The following recommendations are not "written in stone" but instead are suggestions for the best ways to assist you in this program. It is much more beneficial to make only the changes that you can stick with, rather than trying to change everything and failing. Gradually increasing your changes will help in accomplishing your goals of a healthier lifestyle (2-4).

*What to **AVOID**:* Wheat (pastas, breads, muffins, pastries), sugar (candy, sodas), potato, white rice, margarine, partially hydrogenated oils, deep fat fried foods, milk and milk products (if you choose to) (2)

*What to **LIMIT**:* Grains (including corn), fruit juices, oranges, bananas, and root vegetables such as beets, carrots, and yams (2)

*What to **EAT**:*

- Meat, fish, poultry, eggs, nuts, seeds
- Lots and lots of vegetables (cabbage, green beans, tomatoes, peppers, spinach, kale, romaine lettuce, greens, broccoli, cauliflower, Brussels sprouts, summer squash, zucchini, onions, etc…)
- Use olive oil or butter
- When possible, goat cheese and milk might be a better option than cow's milk
- Stevia can be substituted for a sweetener and is available at the health food stores as a powder or a liquid
- Drink at least 2 quarts of non-chlorinated water daily (2)

It is important to feed your body protein on a regular basis. This will keep you from feeling hungry. A guideline for a serving size of protein is about the size of the palm of your hand. Carry some nuts or other protein snack to eat as necessary. If you are going to eat fruit as a snack, eat a few nuts with it. This will help keep your blood sugar stable (2).

Please make these dietary changes, as you are able. It is better to stay at the weight you are at than bounce back and forth.

Remember, progress, not perfection.

13.1.2 Menu Ideas (2)

Breakfast

- Coffee;
- Juice (whole fruits have less of a sugar load than juice or juice concentrate);
- 1/2 grapefruit OR 1/2 pear;
- Skim milk;
- One of the following:
  - No sugar added cereal (Special K, Cream of Wheat)
  - One egg
  - One slice of low-carbohydrate bread with butter or low-fat peanut butter

Lunch

- Chicken salad, tuna salad, or turkey salad on a bed of lettuce with other fresh vegetables OR as a sandwich on a low-carb or whole grain bread;
- A low carb tortilla with meats, veggies, and cheese (Subway and Arby's);
- A low carb tortilla or low carb bread with avocado slices, chicken, bean sprouts, or vegetables;
- Caesar salad or chef salad with low carb dressing;
- Omelet with meat and vegetables;
- Bunless burger with side salad;
- 1 cup vegetable soup and a non-fat yogurt.

Dinner

- Turkey, steak, fish, or chicken (a portion should be the size of your palm);
- Brown rice;
- Low carb pasta;
- Veggies;
- Salad.

Example dinners:

- Garden salad, spinach, chicken breast (skinless), steamed brown rice, cantaloupe;

- Steak, snow peas, whole-wheat low carb pasta, yogurt with berries.

A light snack is: Celery sticks, a few slices of cheese, a handful of nuts or pumpkin seeds, a slice of low carb toast with butter a granola bar, or a piece of fruit.

A light snack is not: Fast or fried food, pasta, potato, cookies, crackers, or and sweet or dessert item (2).

Table A: DIET- AND HEALTH-FRIENDLY FOODS (2,3)

VEGETABLES		FRUITS	
Artichokes	Lettuce	Apples	Mangoes
Asparagus	Mushrooms	Apricots	Nectarines
Beet Greens	Mustard Greens	Blackberries	Oranges
Broccoli	Onions	Cantaloupe	Papaya
Brussels Sprouts	Parsley	Cherries	Plum
Cabbage	Peas	Cranberries	Peaches
Carrots	Peppers	Fruit Salad	Pears
Cauliflower	Pumpkin	Grapefruit	Pineapple
Celery	Radishes	Grapes	Pomegranates
Chives	Red Cabbage	Honeydew	Prunes
Corn	Rhubarb	Huckleberries	Raspberries
Cucumbers	Sauerkraut	Lemons	Strawberries
Dill Pickles	Scallions	Limes	Tangerines
Eggplant	Squash	Loganberries	Watermelon
Garlic	String Beans		
Green Beans	Tomato		
Kale	Turnip		

Table B: METABOLISM-BOOSTING FOODS (2,3)

FISH	FRUITS	VEGETABLES
Clams	Apple	Artichokes
Cod Steaks	Banana	Asparagus
Crabs	Cantaloupe	Broccoli
Flounder	Grapefruit	Brussels Sprouts
Haddock	Kiwi	Cabbage
Lobster	Mango	Carrots
Mussels	Nectarine	Cauliflower
Oysters	Orange	Celery
Pollock	Papaya	Cucumber
Sea Bass	Peach	Eggplant
Shrimp	Pear	Green Beans
Terrapin	Pineapple	Leeks
Tuna	Plum	Lettuce
	Raspberries	Mushroom
	Strawberries	Onion
	Tangerine	Peppers
	Lemon and Lime Juice	Radishes
		Spinach
		Squash
		Swiss Chard
		Tomatoes
		Zucchini

Restricting dietary intake of fats and simple carbohydrates is a health-conscious choice and an important mechanism of weight management (2-4).

This is the order in which your body creates fuel...

1. The body uses sugar for fuel first because it requires little energy to break it down.

2. Next, the body uses simple carbohydrates (such as those found in pasta, bread, pretzels, etc.) for fuel.

3. Third, the body will burn complex carbohydrates (such as those found in vegetables, brown rice, nuts, whole grains) because they require more energy for the body to convert them into sugar.

4. Fourth, the body will use proteins (meat, poultry, fish) for energy.

5. Fat is burned last because it takes the most energy to burn. The body would rather store this energy for a rainy day.

By cutting out sugars and simple carbohydrates from your diet, you will theoretically force the body to burn complex carbohydrates, protein, and fat (2-4).

The Food Log is designed as a support tool for the subject rather than a quantitative collection tool for studies. By asking the subject to write down their food consumption for 1 day per week, a number of goals are accomplished:

- The subject is reminded to monitor their food intake;
- The subject's memory is triggered to remember their food intake when completing the self-reporting compliance question;
- The nurse is assisted in initiating a discussion to evaluate the subject's current situation, goals, progress, challenges, and compliance.

13.2 Exercise

Exercise compliance is also defined according to each study's requirements. When an exercise program is identified in a study protocol, compliance is based on meeting exercise recommendations. When exercise levels are to be maintained throughout the study, compliance is based on how well subjects were able to maintain their normal exercise levels.

As with diet recommendations, the goal of a formal exercise program is to encourage but not require healthy patterns that can be maintained as permanent lifestyle changes but do not incur a financial burden. Exercise program recommendations are based on literature research and recommendations from our medical director.

The following are the recommendations made for studies with an exercise program, unless otherwise noted in the protocol.

13.2.1 Exercise Recommendations

The recommended exercise program is a minimum of three days per week, for 20 minutes each day, of light-to-moderate aerobic exercises and two days per week, for 10 minutes each day, of resistance training. Aerobic exercise is defined as activity that uses the same large muscle group(s), rhythmically, for a period of 15 to 20 minutes or longer while maintaining 60-80% of one's maximum heart rate (3).

Examples of aerobic activities include walking, hiking, jogging, swimming, jumping rope, racquetball, bicycling, and dancing. Resistance training is defined as using the peripheral muscles to pull or push against a force. Examples include weight lifting, rowing, pushups, pull-ups, sit-ups, and crunches (5,6).

The Exercise Log is designed as a support tool for the subject rather than a quantitative collection tool for studies. By asking the subject to write down when they exercise, a number of goals are accomplished:

- The subject is reminded to monitor their exercise program adherence;
- The subject's memory is triggered to remember their exercise program adherence when completing the self-reporting compliance question;
- The nurse is assisted in initiating a discussion to evaluate the subject's current situation, goals, progress, challenges, and compliance.

We believe that a commitment to formal exercise above and beyond exercise associated with activities of daily living is a necessary part of healthy weight management. However, as with food intake, the goal of formal exercise is to encourage but not require healthy patterns that can be maintained as **permanent** lifestyle changes and **do not present a financial burden**.

14. MASKING

Where applicable and clearly indicated, clinical trials are triple-masked by virtue of masking the subject, the research staff, and the biostatistician. The clinical trial coordinator oversees the preparation of bags containing assigned product according the randomization list. Each bag is marked with a subject identification number which is then dispensed by the research staff in ascending numerical order to qualified subjects upon randomization. The clinical trial coordinator maintains the randomization scheme, randomization list, and related documents. The randomization list is only disclosed in the event of a serious adverse event. If the randomization list is disclosed, the circumstances surrounding the disclosure of the randomization list are thoroughly documented and the IRB and the study sponsor are notified.

15. PRIMARY ENDPOINTS AND STATISTICAL SIGNIFICANCE

Endpoints for our studies come directly from an assessment of claims and outcomes applicable to the product. For example, if a dietary supplement is intended to relieve menopausal symptoms, then research into the primary physical and emotional parameters associated with menopause would be conducted. Those parameters with documented evidence of peer-reviewed validation would be included as primary endpoints.

An assessment of an individual parameter from a group of parameters is made by testing the statistical differences (p-values) between those randomized to product vs. placebo. Normally, statistical significance is set at 0.05. However, in pilot studies with fewer than 50 or 60 total subjects, the p value may be set higher. Standard chi-square or t-tests are used for two-group designs, whereas ANOVAs are used in studies with more than two groups.

Efficacy and safety analysis is conducted on both the intent-to-treat and evaluable population.

The intent-to-treat population is defined as subjects who use at least one dose of assigned product.

The evaluable population is defined as subjects who use 85% or more of the assigned product and complete 85% or more of the clinical trial forms and logs.

A comparison between the product group and placebo group is made for the evaluable subject population. Additional analyses are conducted on the intent-to-treat population to compare the mean change from baseline in the groups. The intent-to-treat analyses use the last value carried forward method.

When weight is used as a primary efficacy measurement in a study, procedures for measurement collection are much more specific than when weight is used as a safety measurement. Generally, when weight is used as a primary efficacy measurement, subjects are asked to consume only a light snack and water for at least 6 hours before each visit. Subjects are also asked to consume the same light snack before each follow-up visit, and to schedule follow-up visits within 1 hour of their baseline visit. This is done in an effort to minimize the potential confounder of eating pattern variation on weight measurement consistency. In our experience, variations in eating patterns immediately prior to weight measurements can shift a weight by as much as 2 pounds; if not standardized, this can significantly skew study results. While weight fluctuations are acceptable when weight is used as a safety parameter, these fluctuations can have a significant impact when weight is used as a primary efficacy measurement.

16. PHOTOGRAPHS

When photographs are used in a study, unless otherwise noted in the protocol, subjects will have a Polaroid photograph taken at their Baseline Visit for identification. The photographs are clothed and identifiable unless otherwise noted, and are therefore protected to the same extent as other personal identifiers. Additionally, photographs used as a primary efficacy measurement are scored internally and are not used or released outside of Marshall-Blum without additional written permission, except when required by law. Numbers and types of photographs taken for use as a primary efficacy measurement for a clinical trial are defined in the trial's protocol. Photographs will be processed at Bangor Photo, in-house. Bangor Photo's Confidentiality Policy statement is on file at Marshall-Blum and is available upon request.

17. MEDICAL ELIGIBILITY DETERMINATION PROCEDURE

Initial assessment of potential subject medical eligibility for clinical trials is performed by following an Intake Call Script and using an Intake Form. The Intake Form asks general questions about a potential subject's medical history and current health status. The questions are shaped to flag specific exclusionary and cautionary conditions identified with the condition and in a Product Formulation Due Diligence extraction. If the potential subject tentatively qualifies for the study during the Intake Form screening, they are asked to detail their medical history and current health status at the Initial Visit after

signing the Consent Form. Based on the health history information provided by the subject and the cautionary and exclusionary conditions specific to the study protocol, the nurse makes a decision to either include or exclude the subject from trial participation. In the event that a condition is determined by the nurse to be marginal with respect to inclusion criteria, she discusses the scenario with the medical director. The principal investigator is informed of the decision reached by the nurse and medical director. Depending on the decision reached by the nurse and medical director, we may ask a potential subject to gain permission from their healthcare provider (written or by telephone) to participate if it is decided that the condition remains marginal with respect to inclusion criteria. The outcome of such a decision is fully documented in a subject's chart.

18. SUBJECT DISCONTINUATION

In the event a subject withdraws from a clinical trial prematurely, the assessments required for the last visit are completed whenever possible. Every effort is made to collect the assigned product container(s) and unused assigned product. If the subject is withdrawn due to an adverse event(s), the subject is monitored until the adverse event has resolved or until the event is determined to be due to a stable or chronic condition or intercurrent illness(es).

A Drop Explanation Form is completed to document the reason for subject discontinuation. Reasons for a subject's removal from the clinical trial may include, but are not limited to:

- Adverse event(s);
- Noncompliance;
- Withdrawal of consent;
- Disqualification.

Compliance is defined as subjects who use 85% or more of the assigned product and complete 85% or more of the clinical trial forms and logs.

Exercise and food intake compliance are defined according to each protocol's requirements. Where a specific diet and/or exercise is defined in a protocol, compliance is based how well subjects were able to adhere to the diet and exercise program recommendations. Where diet and exercise are to be maintained for the duration of a study, compliance is based on how well subjects were able to maintain their diet and exercise levels.

If a subject withdraws from the clinical trial, the subject's identification number is not reassigned.

19. TRIAL DISCONTINUATION

A clinical trial may be prematurely terminated, if in the opinion of the principal investigator or the study sponsor, there is sufficient reasonable cause. Circumstances that may warrant termination include, but are not limited to:

- Determination of unexpected, significant, or unacceptable risk to the subjects;
- Plans to modify, suspend or discontinue the development of the active product.

20. ADVERSE EVENTS

20.1 Assessment of Adverse Events

An adverse event (AE) is any reaction, side effect or other undesirable experience that occurs in conjunction with the use of the active product, whether or not the event is considered related to the active product.

New and worsening signs and symptoms of underlying or emerging disease are recorded as an adverse event. Any subject complaint reported is recorded as an adverse event.

All adverse events will be mailed to the sponsor within 10 business days of them being reported and documented using the Adverse Event Form and Drop Form, when applicable, included in the clinical trial protocol.

20.2 Adverse Event Severity Definitions

- Mild – The adverse event, taken as an isolated event, would cause no limitations of usual activities.
- Moderate – The adverse event, taken as an isolated event, would cause some limitation of usual activities.
- Severe – The adverse event, taken as an isolated event, would cause severe limitations or inability to carry out usual activities.

20.3 Relationship to Clinical Trial Product Definitions

- Not Related – Unrelated to the clinical trial product consumption.
- Remote – Possibility of relationship to clinical trial product consumption is remote, but can not be ruled out with certainty.
- Possible – Possible relationship to the clinical trial product consumption.
- Probable – Relationship to clinical trial product consumption is fairly certain.
- Definite – Relationship to clinical trial product consumption is certain.

20.4 Serious Adverse Events

A serious adverse event (SAE) is any adverse event occurring that results in the following:

- Death;
- A life-threatening event;
- Requires in-patient hospitalization;
- A persistent or significant disability/incapacity.

Important medical events that may not result in death, be life-threatening, or require hospitalization may be considered a serious adverse event when, based upon appropriate medical judgment, they may jeopardize the subject and may require medical or surgical intervention to prevent one of the outcomes listed above.

The following types of adverse events will also be mailed to the sponsor and the IRB within 5 business days of them being reported and documented: serious events that are possibly, probably, or definitely related to the clinical trial; and unanticipated events that are possibly, probably, or definitely related to the clinical trial. These adverse events will be reported and documented using the Adverse Event Form and Drop Form included in the clinical trial protocol and the IRB Adverse Event Form provided by the IRB. A SAE resulting in death is an exception and will be reported to the sponsor and IRB within 24 hours of being reported and documented.

21. SUBJECT CONTACT IN RELATION TO CLINIC APPOINTMENTS

21.1 Primary Contact

Primary contact with a potential subject is made when the potential subject calls or stops by the Clinic. Most often, the potential subject has heard our radio recruitment ads and wishes to learn more about a specific clinical trial. When primary contact is made with a potential subject, the following procedure is followed:

1. The study and study process are reviewed.
2. If the caller agrees to continue, qualifying information is collected.
3. If the caller agrees to continue and tentatively qualifies, contact information is collected.
4. An appointment is scheduled.
5. Directions are given.

An Intake Call Script is created for each trial and is followed during the intake process.

Potential subjects are asked during the Intake Form process if, for confidentiality reasons, it is acceptable to leave a message with anyone answering their primary contact telephone number or an answering machine. Typical responses include:

- Yes,
- No,
- Caller name and telephone number only.

A note is then made and highlighted on the Intake Form and a note is placed on each appointment in the computer as a reminder to the research staff.

21.2 Reminder Calls

A reminder call is placed to all potential subjects and subjects the day before scheduled appointments. Notes made during the Primary Contact are strictly adhered to.

21.3 Missed Appointments

When a potential subject or subject misses a scheduled appointment, a multi-stage rescheduling protocol is implemented.

The rescheduling protocol is:

1. Place a call the day of the missed appointment. Typical outcomes include:
    a. The potential subject or subject is contacted and the appointment is rescheduled or cancelled. This ends the protocol.
    b. A message is left in accordance with the Primary Contact indication. If no response to a message is received in 3 business days, proceed to step 3.
    c. If indicated, no message is left; proceed to step 2.
    d. If there is no answer, proceed to step 2.
    e. If the line is busy, proceed to step 2.
    f. If the line is disconnected, proceed to step 3.

2. If there is a primary contact indication not to leave a message, there is no answer, or the line is busy a second call will be made the next day. Filter the second call through step 1, but if the second call is ultimately unsuccessful, proceed to step 3.

3. A letter is sent to the subject informing them of our inability to contact them to reschedule their appointment. They are given 7 business days for a response. If there is no response, proceed to step 4.

4. The potential subject or subject is discontinued for non-compliance.

22. STATISTICAL CONSIDERATIONS

22.1 General Considerations

All data is entered into a Microsoft Access database. The statistical analysis is performed using SPSS, version 12.0 (SPSS, Inc. of Chicago, Illinois, USA).

Simple descriptive statistics including means with standard deviations or frequencies with percentages and crosstabs are tabulated for all outcomes.

Statistical significance is generally set at 0.05.

22.2 Demographic and Baseline Analysis

Demographic and baseline data are analyzed to determine the comparability of the subjects randomly assigned to the product group versus placebo group. Fisher's exact tests for categorical variables and two-sample t-tests for continuous variables are used to compare two groups (7).

22.3 Efficacy and Safety Analysis

The efficacy and safety variables assessing the product versus placebo are the difference-of-means defined as the change from baseline as collected at each successive visit as defined in the protocol. For two groups, categorical variables are analyzed by the Mantel-Haenszel chi-square test except for small cell sizes where Fisher's exact two-tail chi-square test is used. Continuous variables are analyzed by the two-sample t-test. Examples of categorical variables include diabetes, hypertension, and income. Examples of continuous variables include age, weight, and average co-morbid risk.

Continuous data may be analyzed both as continuous and as categorical data. For example, energy may be assessed as the difference-of-means between an active product versus placebo group, but may also be classified as those subjects with energy of less than 2 (0 to 9 scale), a categorization of subjects considered in low energy. Assessments of a given variable both for means and for categories can be useful, since the means can hide important differences between groups by disguising the tails of distribution (8).

22.4 Adverse Event Analysis

Incidence of reports of adverse events is summarized for subjects who consume at least one dose of their assigned product during the clinical trial. Incidence of reports of adverse events is compared between the product and placebo groups. Fisher's exact tests are used to compare product versus placebo for numbers of subjects experiencing one or more adverse events and numbers of subjects experiencing one or more adverse events considered related to the product or placebo.

22.5 Confounders and Effect Modifiers

Examples of potential confounders or effect modifiers include:

- age,
- socioeconomic status,
- medications,
- baseline primary efficacy measurements,
- number of prior treatments,
- and co-morbid conditions.

The co-morbid risk score is used to analyze co-morbid conditions. The co-morbid risk is comprised of 1 point for each of the major co-morbid factors plus points awarded for smoking, caffeine use, and alcohol consumption. The typical distribution in our clinical trials ranges from 0 to 6 or 7 points. Based on the specific distribution, 3 or 4 points is set as the classification of individuals at a higher co-morbid risk than the bulk of the distribution.

Table C: Co-Morbid Risk Scoring Example

Variable	Subject A	Subject B
Diabetes	1	0
Hypertension	0	1
Heart disease	0	0
COPD[1]	0	1
Ulcers	0	0
History of cancer	0	0
Heavy smoker[2]	1	0
Heavy caffeine use[3]	1	0
Elevated alcohol use[4]	0	1
Total Risk Score[5]	**3**	**3**

[1]Chronic obstructive pulmonary disease. [2]Smokes more than 1 pack per day (ppd). [3]Consumes more than 3 cups of coffee or the caffeine equivalent per day. [4]Consumes more than 4 standard alcoholic drinks per week. [5]In this example both subjects have a risk score of 3 points.

Adjustments are made for potential confounders by one of two methods. This includes analyses of the differences of means and categorical analysis. Variables such as age, co-morbid risk score, and baseline primary efficacy measurements may be assessed against the primary endpoint (a difference variable is created by subtracting the baseline value from the end-of-study value for each given parameter) by both the difference of means and by categorical analysis.

Categories are created for each of these potential confounders. As an example, age categories would be based on five-year intervals. The intervals for other confounders would depend on the distribution of the data. A potential co-morbid distribution has a range from 0 to 10 points (we typically observe a range of 0 to 7 points as stated earlier). It would be most likely that these intervals would be approximately 0 to 2 (low co-morbid risk), 3 to 5 (moderate co-morbid risk), and 6 or more (high co-morbid risk). These categories form the basis of the confounder analysis.

The primary endpoints are the primary efficacy measurements collected at baseline and follow-up visits.

Typically, the responses are grouped together to represent mild symptoms. Categories using the more severe responses may be grouped together based on the purpose of the analysis. These categories are used to adjust for the end-point responses.

22.6 Power and Sample Size Considerations

Currently, approximately 40% of subjects who call to inquire about a study from radio advertisements do not successfully enroll in the study (defined as completing the informed consent process). This rate is attributed to a number of factors including:

- Disinterest after further details are provided during the initial contact conversation;
- Disqualification during the initial contact conversation;
- Disqualification upon registered nurse review of the initial contact information collected (Intake Form);
- Cancellation of their Initial Visit, usually attributable to commitment or schedule conflict or disinterest upon further reflection;
- Inability to keep their Initial Visit.

Of those subjects who enroll in any given study, approximately 10% to 25% will drop out of or are dropped from the study before its completion. The factors that influence this rate are documented and provided to the sponsor on the Drop Form.

To provide the best chance of initially enrolling enough subjects, and given that the recruitment retention numbers are fluid in every study, we base calculations on a 40% screening to enrollment loss, and a 25% enrollment to completion loss.

An example sample size that may be defined for a clinical trial given the ratio of product to placebo of 1:1:

- A minimum of 30 evaluable subjects in the product group are needed to complete the clinical trial;
- A minimum of 30 evaluable subjects in the placebo group are needed to complete the clinical trial;
- Using an enrollment to completion drop-out loss rate of 25%, approximately 80 evaluable subjects are needed to begin the clinical trial;
- Using a screening to enrollment drop-out loss rate of 40%, approximately 134 people are needed for screening.

Subjects who drop out before the completion of the trial are considered in the analysis in the following manner:

- *Baseline Characteristics* are conducted separately for two groups.
  - Intent-to-treat population (all enrolled subjects regardless of completion)
  - Those that completed the study
- *End-Point Analyses* are conducted separately for three groups.
  - Intent-to-treat population (all enrolled subjects regardless of completion)
  - Partial completion to full completion population
    - Where at least 2 follow-up visits were completed
    - And where the relative number of partial completion cases did not differ by assigned product group
  - Those that completed the study

The last value carried forward analysis method is used when an analyzed subject does not complete a given study.

Sample size calculations are based on two different statistical programs:

- SamplePower 2.0 (SPSS, Inc. of Chicago, Illinois, USA);
- ProPower, version 1.0.

The changes in primary efficacy measurements form the basis of the sample size calculation. Baseline primary efficacy measurements are expected to be essentially equal between product and placebo groups, just as would be expected for demographics, behavioral, medical, and socio-economic status factors.

Assumptions used for calculating the sample size include:

- Alpha = 0.05;
- Power = 0.80;
- 2-group;
- Equal proportions for each of two groups.

23. DOCUMENTATION

Marshall-Blum maintains all clinical trial records according to Good Clinical Practices (GCP). Records are retained for at least three years after the clinical trial is completed. After three years, Marshall-Blum contacts the study sponsor to negotiate further storage agreements.

24. QUALITY CONTROL AND ASSURANCE

24.1 Control Procedures

A periodic review of procedures and clinical trial execution by a non-involved third party (may be internal or external at the discretion of the principal investigator) is conducted.

24.2 Good Clinical Practices (GCP) Compliance

All clinical trials are conducted in accordance with Good Clinical Practices (GCP) and the appropriate regulatory requirements. The principal investigator is thoroughly familiar with the appropriate use of the clinical trial procedures as described in the protocols. Essential clinical documents are maintained to demonstrate the validity of the clinical trial and the integrity of the data collected. Master files are established at the beginning of the clinical trial, maintained for the duration of the clinical trial and retained according to the appropriate regulations.

25. FINAL REPORT

At the end of every study, all data is placed into a final report that includes the following sections:

- Executive Summary
  - Protocol Summary
  - Methodology used in Analysis
  - Results
  - Conclusions
- Blank Forms
- Demographics: split between product and placebo groups, with p values
  - Demographics (age, gender, height, weight, Body Mass Index)
  - Behavioral (caffeine intake, alcohol intake, smoking)
  - Medical Co-Morbid Parameters (diabetes, cardiac, etc.)
  - Socio-economic Parameters (income, education, etc.)
- Results
  - Primary and secondary end-points
- Example Charts (all personal identifiers stripped out)

26. USE OF INFORMATION AND PUBLICATION

The study sponsor and Marshall-Blum co-own all clinical trials unless otherwise specified.

All information provided by study sponsors to Marshall-Blum is privileged and confidential information. Marshall-Blum agrees to use this information to accomplish the clinical trials and will not use it for other purposes without consent from the study

sponsors. The information obtained from the clinical trials may be disclosed to regulatory authorities without prior notification to the study sponsors. Marshall-Blum has the right to use this data to market its ability to conduct clinical trials.

The protocols and all associated documents as listed in the protocol table of contents, including the appendices, or any portion of these documents and all associated documents are the sole proprietary intellectual property of Marshall-Blum. Any dissemination, distribution or copying of these or any portion of these documents and their associated documents is strictly prohibited without the expressed written consent of Marshall-Blum LLC, 268 State Street, Bangor, ME 04401. Violations of this statement will be considered very serious and appropriate reparations will be sought.

It is anticipated that the results of all clinical trials will be used towards the development of the study sponsors' products and be presented at scientific meetings and/or published in peer reviewed scientific or medical journals.

27. DEFINITIONS

A. "Healthy" as used in structure-function claims for dietary supplements is defined as a low incidence (less than 10%) of mild to moderate adverse events probably or definitely related to the product with no serious adverse events probably or definitely related to the product.

28. REFERENCES

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DIET GOEN 4G PRODUCT FORMULATION DUE DILIGENCE (PFDD)
MAY 3, 2004

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TABLES

Table A: Ingredient Dosage Summary				
Ingredient	Maximum amount in the products	Recommended Dietary Allowance (RDA)	Common Dose	Toxic Dose
Chromium (1)	450 mcg	n/a	200-600 mcg/day	None noted
Vanadium (2,3)	90 mcg	n/a	10 mcg-10 mg/day	None noted
Glucomannan (1,4)	1.2 g	n/a	1.5-4g/day (1 gram 1 hour before each meal)	None noted
Sodium carboxymethylcellulose (5,6)	600 mg	n/a	20 g to 35 g/day of dietary fiber	None noted
Citrus naringin (2, 7-9)	45 mg	n/a	None noted	None noted
Glucosamine (1)	300 mg	n/a	1-1.5 grams/day	None noted
Cocoa (1,10)	975 mg	n/a	None noted	None noted
Green tea (1)	1.5 g	n/a	300-400 mg green tea extract/day	None noted
Hoodia gordonii (11-13)	750 mg	n/a	None noted	None noted

2. CHROMIUM (from chromium dinicotinate glycinate)

Chromium is an elemental metal with the chemical symbol Cr. It is an essential trace mineral found naturally in liver, brewer's yeast, whole grains, nuts, peanuts, cheese and fresh or minimally processed fruits and vegetables. Supplemental chromium is theorized to have glucose-regulatory, hypocholesterolemic, and anti-atherogenic activity (1,15).

Physiologically, chromium works with insulin to metabolize blood sugar; it is theorized to aid in the metabolism of fat and protein, and to activate enzymes and protect genetic material. The body only absorbs small amounts of dietary chromium because of aging and other factors. Diets high in processed foods, sugars and fats reduce chromium absorption even further (1,15).

Symptoms of chromium deficiency include elevated LDL cholesterol, lower HDL cholesterol, cataracts, stunted growth in children, sexual dysfunction, weakened immune response, and various neurologic disorders including numbness and tingling often associated with diabetes and unexplained weight loss (1,15).

Studies have demonstrated the efficacy of chromium in management of type-2 diabetes. Specifically, in a double-blind, placebo-controlled study of 180 subjects with type-2 diabetes, supplemental chromium demonstrated a significant improvement in fasting glucose, postprandial glucose, insulin, hemoglobin A_{1c}, and cholesterol levels. Studies on the efficacy of chromium as a body fat reducer/lean muscle mass increaser have produced ambiguous results. One study reported that six weeks of chromium supplementation resulted in a significant increase in lean muscle mass and a decrease in body fat among athletes. However, numerous follow-up studies failed to demonstrate the same effect (1,15).

Table B: Chromium Estimated Minimum Daily Requirements* (1)	
Group	Daily dose (mcg)
Infants under 6 months	10 - 40
Infants 6 to 12 months	20 - 60
Children 1 to 3 years	20 - 80
Children 4 to 6 years	30 - 120
Females and Males 7 and older	50 - 200
Females during pregnancy	
Females during breastfeeding	
*Recommended Dietary Allowances (RDAs) have not been established.	

A common dose of chromium is 200 mcg/day. A dose of 400 mcg/day is recommended for weight loss and a dose of 600 mcg/day is recommended to improve insulin metabolism. There is no toxic dose noted for chromium but high doses may reduce the absorption of zinc and iron (1).

People with diabetes should use caution when supplementing with chromium (1).

Vitamin C increases the absorption of chromium and calcium reduces its absorption (15).

Chromium may cause stomach irritation. This can be avoided by taking a chromium supplement with food and/or a full glass of water (1).

3. VANADIUM (as vanadium amino acid chelate)

Vanadium is a metallic element with atomic number 23 and atomic symbol V that naturally exists in several oxidation states. Vanadium has demonstrated insulin-mimetic properties; thus, it may be effective in glycemic control. Vanadium is also used as an exercise enhancer for its potential ability to increase muscle mass. Sources of vanadium include dill, fish, olives, meat, radishes, snap beans, vegetable oils, and whole grains (2,3).

Physiologically, vanadium is a trace mineral that aids in cellular metabolism, formation of bones and teeth, growth and reproduction, inhibition of cholesterol synthesis, and improvement of insulin utilization. It is not easily absorbed, and uptake is decreased by tobacco use. A vanadium deficiency may result in cardiovascular disease, kidney disease, impaired reproductive ability, and increased infant mortality (2)

There is no RDA or toxic dose noted for vanadium. Common doses range from 10 mcg-10 mg/day (2,3).

There are no noted cautionary conditions (2,3).

Chromium, ferrous ion, chloride, aluminum hydroxide, and EDTA may decrease absorption of vanadium (3).

There are no noted side effects (2,3).

4. **GLUCOMANNAN (konjac, konjac mannan, ju ruo, konjaku, konnyaku)**

Glucomannan is a soluable dietary fiber derived from konjac flour; which is a derivative of the *Amorphophallus* genus native to China and Japan. It is a hydrocolloidal polysaccharide comprised of D-glucose and D-mannose residues bonded together in beta-1-4 linkages. Glucomannan may be useful as an appetite suppressant for weight control and as a laxative; it may also lower total and low-density-lipoprotein (LDL, or "bad") cholesterol and slow the release of blood glucose which may aid in controlling diabetes (1,4).

Glucomannan swells up to two hundred times its volume by absorbing water in the stomach and intestinal tract; the result is a hydrolysis-resistant gel that acts as an appetite suppressant by inducing a feeling of fullness. The increase in stool bulk associated with this swelling action is responsible for glucomannan's laxative effects; additionally theorized glycemic control actions may be due to reduced intestinal absorption of carbohydrates due to decreases in small intestinal transit time. Glucomannan is theorized to stimulate the conversion of cholesterol to bile acids and reduce intestinal absorption of cholesterol; these putative actions may be the mechanism for demonstrated hypocholesterolemic activity (1,4).

Studies have demonstrated the efficacy of glucomannan in the management of obesity, hypercholesterolemia, and blood glucose levels. In one eight-week, double-blind study, 20 obese subjects received one gram of glucomannan or placebo daily. Subjects were instructed to not change eating or exercise habits. Glucomannan-supplemented subjects had a mean weight loss of 5.5 pounds at the end of the 8-week period; additionally, total and LDL cholesterol levels were significantly reduced. In another study of 60 children under the age of 15 with childhood obesity, there was a demonstrated reduction in LDL cholesterol levels in the glucomannan-treated group; however, weight loss was demonstrated in both glucomannan-treated and placebo groups. In another recent randomized, placebo-controlled trial, glucomannan was found to significantly improve glycemic control in high-risk type-2 diabetic patients (4).

There is no RDA or toxic dose noted for glucomannan. Dose recommendations range from 1.5 g to 4 g/day (1g an hour before each meal) (1,4).

Caution should be used by people who have a problem swallowing pills (1,16).

Glucomannan may decrease the absorption of fat-soluble vitamins including vitamin A, vitamin D, vitamin E and beta-carotene (1,16).

There are no noted side effects (1,6).

5. SODIUM CARBOXYMETHYLCELLULOSE (modified cellulose gum)

Sodium carboxymethylcellulose is a modified cellulose gum. Cellulose is an insoluble dietary fiber found in relatively high concentrations on the outer layer of vegetables and fruits. It has been used medicinally for treatment of hemorrhoids, varicose veins, colitis, constipation, obesity, and to cleanse the colon of potentially cancerous substances (2,17).

Cellulose increases the bulk of feces. This increase in bulk stimulates bowel contractions and thus reduces stool transit time through the intestine, resulting in a laxative effect. This reduced stool transit time aids in the removal of ingested heavy metal carcinogens, which is a cancer-preventative mechanism. Dietary ingestion of cellulose and other fibers may be helpful in weight control efforts; a diet of foods providing adequate fiber is usually less energy-dense and larger in volume than a low-fiber diet. This larger mass of food takes longer to ingest and its presence in the stomach provides a feeling of satiety sooner, lessening the urge to overeat (5,6,17).

There is no RDA, common dose, or toxic dose noted for cellulose. Dose recommendations for dietary fiber range from 20 g to 35 g/day, with a 1 to 1 ratio of soluble to insoluble dietary fiber (5,6).

People with chronic constipation and other gastrointestinal disorders should use caution with supplemental cellulose (5).

Supplemental or excessive dietary fiber may reduce the absorption of prescription drugs, over-the-counter drugs, and dietary supplements (17).

Side effects may include loose bowel movements, excessive gas, and occasional stomach pain (6).

6. CITRUS NARINGIN

Naringin is a bioflavonoid found in citrus fruit. Bioflavonoids are a large class of antioxidants that are sometimes referred to as flavonoids or vitamin P. Bioflavonoids maximize the benefits of vitamin C by preventing its breakdown in the body. Bioflavonoids are essential nutrients; they are not produced by the human body and therefore must be derived from dietary sources. Bioflavonoids are potentially useful as antioxidants, antivirals, anti-inflammatories, and anticoagulates; for blood vessel health (through strengthening of blood vessel walls); for the prevention of heart disease, cancer, bruising, aging symptoms, nosebleeds, miscarriages, postpartum bleeding and other types of hemorrhages; for the treatment and prevention of menstrual disorders; to reduce cholesterol and pain; and for the improvement of circulation, liver function and vision and eye diseases (2,16).

Naringin has been shown to demonstrate antioxidant properties. It is a source of soluble fiber; lending it the potential to decrease low-density-lipid cholesterol (LDL, or "bad" cholesterol). It is also believed that naringin has anti-inflammatory effects although its mechanism of action is not fully understood (2,7-9).

An animal study utilized naringin administered intravenously and orally to identify the differences via administration in the metabolic pharmacokinetics of naringin. Taken orally, naringenin demonstrated a bioavailability of 4%. In another study, naringin demonstrated in vivo efficacy in animals in decreasing plasma cholesterol levels and as an anti-atherogenic agent (18).

There is no RDA, common, or toxic dose noted for naringin (2,7-9).

Caution should be used with naringin by women who are pregnant or breastfeeding, and by children (18).

Bioflavonoids such as naringin may decrease the effects of certain chemotherapy drugs. Naringin has demonstrated amplification of the effects of calcium channel blockers such as amiodipine (Norvasc), Verapamil (Calan), and Nifedipine (Procardia). Co-administration of vitamin C will increase the effects of naringin (18).

There are no noted side effects (2,7-9).

7. **GLUCOSAMINE (glucosamine sulfate, glucosamine hydrochloride, N-acetyl-glucosamine [NAG])**

Glucosamine is an amino sugar essential to body tissue construction. Medicinally, glucosamine is taken primarily to enhance joint function, prevent cartilage deterioration, and relieve joint pain, particularly in those with osteoarthritis (1,19).

Glucosamine is a building block of glycosaminoglycans (GAG), the main components of cartilage. Together with chondroitin sulfate, glucosamine helps to build and repair cartilage, tendons and ligaments. Though the body normally produces enough glucosamine and chondroitin, as people age the levels of these substances drop and the subsequent cartilage deterioration results in osteoarthritis. As a result, glucosamine is used as a supplement to reduce the symptoms of and prevent osteoarthritis. Glucosamine is not found in foods but supplements are made from chitin which is part of the shells of shrimp, lobsters, crabs and other marine animals. Glucosamine is available in a number of forms including glucosamine sulfate, glucosamine hydrochloride and N-acetyl-glucosamine (NAG) but glucosamine sulfate is the preferred supplement form (1,19).

Veterinarians have used glucosamine for years to relieve arthritis symptoms in animals. Human clinical trials in Germany have demonstrated an improvement in 50 to 80 % of arthritis patients. In an American study, 155 osteoarthritis patients were given injections

of either 400 mg of glucosamine or a placebo biweekly for six weeks. A significantly higher percentage of glucosamine-treated patients showed improvement in joint function when compared with the placebo group (1).

There is no RDA for glucosamine. A common dose is 1,500 mg/day which is sometimes reduced to 1,000 mg/day after one to two months. There is no toxic dose noted (1).

Caution should be used by people with diabetes (1).

There are no noted drug or dietary supplement interactions (1,2,19).

Side effects include heartburn and diarrhea which may be avoided by taking glucosamine with food (1).

8. COCOA (*Theobroma cacao*; **standardized for phenylethylamine [PEA], tyramine, and 10% theobromine)**

Cocoa is the main ingredient in chocolate and comes in the forms of extract, powder, cocoa butter, syrup and liquor. Cocoa has traditionally been used as a soothing drink and to stimulate appetite and in its butter form for chapped lips, chapped skin, burns and sore breasts due to breast-feeding. In moderation, it may also be useful as a weight control aid and in maintenance of cardiovascular health (1,11).

Cocoa is rich in flavonoids, biological substances that have antioxidant, antiviral, anti-inflammatory, and hypocholesterolemic activity. Many epidemeologic studies have demonstrated the physiologic benefits of flavonoid consumption; however, few studies demonstrate the effectiveness of cocoa flavonoids in medicinal applications. It is theorized that in moderation, cocoa consumption may provide medicinal benefits associated with its flavonoid content (1,11).

There is no RDA, common dose, or toxic dose noted for cocoa (1,11).

There are no noted cautionary conditions (1,11).

There are no noted drug or dietary supplement interactions (1,11).

Side effects may include insomnia and nervousness (1,11).

9. GREEN TEA (*Camellia sinensis*, **40%, standardized for epigallocatechin gallate [EGCG], polyphenols, and 40% caffeine)**

Green tea, black tea and oolong tea come from the tea plant, *Camellia sinensis,* and have been consumed for over five thousand years. The difference in the teas arises from the way leaves are prepared. Green tea leaves, unlike black and oolong tea leaves are not

fermented; thus, active constituents remain unaltered in green tea. Green tea may be useful in relieving hypercholesterolemia, as a weight control aid, and to reduce the risk of colon, rectum, stomach, pancreatic, and esophageal cancers and atherosclerosis (1,2,21).

Green tea contains compounds known as polyphenols (specifically catechins) that have antioxidant, antibacterial and antiviral actions. Specifically, epigallocatechin gallate (EGCG), a polyphenol in green tea, is able to penetrate cells and shield DNA from hydrogen peroxide, a potent free radical. Green tea's efficacy in the prevention of cancer and atherosclerosis is associated with EGCG's antioxidant activity. Further, the catechins in green tea inhibit catechol-O-methyl transferase (COMT), an action that prolongs thermogenesis and fat metabolism, two mechanisms associated with weight loss. Catechins are also believed to inhibit lipolysis (the breakdown of fats for small intestinal absorption); thereby inhibiting absorption and theoretically promoting weight loss. Other catechins in green tea serve as hypotensive agents through inhibition of platelet aggregation (1,2,20,21).

In humans, epidemiologic studies have demonstrated the chemoprotective effects of green tea. A Japanese study showed that increased consumption of green tea was associated with a decreased risk of developing adenomatous polyps of the sigmoid colon. *In vitro* and animal studies have demonstrated inhibition of breast cancer cell proliferation with green tea supplementation. Green tea has been shown to improve bodily cholesterol balance (decreasing low-density-lipoprotein [LDL or "bad"] cholesterol and increasing high-density-lipoprotein [HDL or "good" cholesterol] in humans. Epidemiologic studies have suggested that green tea consumption is associated with atherosclerosis prevention. A French double-blind randomized study of 60 obese (body mass index [BMI] greater than 30.0 kg/m^2) women who were given either green tea powder or placebo demonstrated significant decreases in the green tea group in weight and waist circumference at both 15 and 30 days. Another trial of obese persons supplemented with green tea or placebo demonstrated a decrease in weight by 4.6% and waist circumference by 4.5% after three months in the green tea group (20,21).

There is no RDA for green tea. Common dose of green tea extract is 300-400 mg. There is no toxic dose noted (1).

There are no noted cautionary conditions (1).

Caution should be used with codeine (1,16).

Side effects may include insomnia and nervousness from the caffeine content (1).

10. *HOODIA GORDONII* (*Hoodia gordonii* cactus, whole plant/less roots)

Hoodia gordonii is a cactus native to the African Kalahari desert. The San Bushmen of the Kalahari have ingested *Hoodia gordonii* for centuries to satiate themselves during long trips with little food or water. *Hoodia gordonii* may be useful as an appetite suppressant for weight control (11-13).

Putative appetite suppression associated with *Hoodia gordonii* may be due to a molecule isolated from the plant by South African scientists. The molecule, known as P 57, is believed to function as glucose does in the hypothalamus—glucose receptors cause nerve firings that essentially inform the brain of satiation. With glucose, blood sugar levels drop within hours of ingestion, allowing feelings of hunger. P 57 is believed to be much more potent than glucose, so its effects on the feeling of satiety are of a much greater duration. More research is warranted into the effects of *Hoodia gordonii* on appetite suppression (11-13).

There is no RDA, common, or toxic dose noted for *Hoodia gordonii* (11-13).

There are no cautionary conditions noted (11-13).

There are no drug or dietary supplement interactions noted (11-13).

There are no side effects noted (11-13).

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INTERNATIONAL RESEARCH SERVICES INC.

A DOUBLE-BLIND, RANDOMIZED, PARALLEL DESIGN, PLACEBO-CONTROLLED CLINICAL EVALUATION OF THE EFFECTS OF WEIGHT LOSS OF TRIM SPA ULTRA AS A NUTRITIONAL SUPPLEMENT TO DIETING IN ADULT SUBJECTS DESIRING TO LOSE WEIGHT

PROTOCOL NO. 3023GTC0904
October 8, 2004

SITE/INSTITUTION:
International Research Services, Inc.
222 Grace Church Street
Port Chester, NY 10573
914-937-6500

INVESTIGATOR:
Edward K. Boisits, Ph.D.

SUB-INVESTIGATOR:
Roger Villi, M.D.

STUDY COORDINATOR:
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20 Nassau Street
Princeton, NJ 08542
Tel: (609) 683-9484
Fax: (609) 683-9487

Estimated Start Date: 10/19/04

Estimated End Date: 01/10/05

Authorization/Approval:
Signatures below indicate approval to conduct the study as described herein. The study shall not begin until IRSI receives the fully executed protocol.

International Research Services, Inc. — Date: 10/08/04

Edward K. Boisits, Ph.D.
Principal Investigator — Date: 10/08/04

Sponsor Representative — Date: 10/11/04

TABLE OF CONTENTS

1.0 TITLE

A double-blind, randomized, parallel design, placebo-controlled clinical evaluation of the weight loss of Trim Spa Ultra as a nutritional supplement to dieting in adult subjects desiring to lose weight.

2.0 OBJECTIVE

The primary objective of this study is to evaluate Trim Spa Ultra tablets versus placebo relative to their ability to contribute to weight loss in a supervised weight loss program of one hundred-twenty (120) subjects who have a Body Mass Index (BMI) of 25-40, who are expected to be compliant for twelve (12) weeks, and who have the motivation as well as the desire to lose weight. Safety will be assessed by vital signs, blood chemistries and any adverse reactions that might occur.

3.0 BACKGROUND

Trim Spa has developed a product that they feel will be compatible with subjects desiring to lose weight and have a Body Mass Index (BMI) of 25-40. It is Trim Spa's desire to enter into a clinical study that will develop data to establish safety and efficacy.

4.0 CLINICAL SITE

International Research Service, Inc.
222 Grace Church Street
Port Chester, NY 10573

5.0 STUDY PERSONNEL

5.1 INVESTIGATOR:

Edward K. Boisits, Ph.D.

5.2 SUB-INVESTIGATOR:

Roger Villi, M.D.

5.3 STUDY COORDINATOR:

Sandy Haney, M.T. (ASCP)

6.0 STUDY MATERIALS

Description	Code
TRIM SPA ULTRA Tablets/Placebo	
Placebo	

The Sponsor will supply test products in sufficient amount to last twelve (12) weeks for a total of 150 subjects. The products will bear appropriate coding labels and proper use instructions. The Sponsor must notify IRSI of the test product code; description and instructions for use no later than ten (10) business days prior to IRB approval.

6.0 STUDY MATERIALS (Continued)

All test materials will be shipped by the Sponsor, for inside delivery with explicit instructions for handling, storage and use. All test materials must be received by IRSI no later than seven (7) business days prior to the start of the study, however, materials shall not be shipped until IRB approval has been received.

Materials shall be shipped (inside delivery) to:

International Research Services, Inc.
222 Grace Church Street
Port Chester, NY 10573
Attn: Sandy Haney / Study Coordinator (3023GTC0904)

7.0 PRODUCT ACCOUNTABILITY

Upon receipt, product will be logged in and stored in a secure area. Within one (1) month of final report receipt, unless otherwise instructed in writing, test products will be destroyed and disposed of following all applicable local regulations

8.0 STUDY DESIGN

This study is a double-blind randomized, parallel design of twelve (12) weeks duration, consisting of a minimum of eight (8) visits. Subjects will be separated into two (2) groups, treatment and control. Each group will be instructed to follow the same dietary regimen (Diet attached). The treatment subjects' diet will be supplemented with (Trim Spa Ultra Tablets). The control subjects' diet will be supplemented with a matching (*Tablet*) (placebo) for the duration of the study.

9.0 SUBJECT SELECTION

Subjects will be evaluated prior to being accepted into the study. Only those subjects who have a BMI of 25-40 Kg/m^2, and who wish to lose weight; who are evaluated to likely comply; who meet the entrance criteria; and who are in generally good health and have blood sugar and liver profile in normal range will be entered into the study. These volunteers will be males and females between the ages 18 and 68.

A minimum of 140 subjects will be screened from a panel of volunteers from the suburban Westchester, New York area, to allow a minimum of one hundred-twenty (120) subjects, sixty (60) subjects in each group, to enter the study. Best efforts will be made to ensure that all qualified subjects enter and complete the study.

9.1 Inclusion Criteria:

1. Ambulatory male and female subjects.
2. Subjects between 18 and 68 years of age, inclusive at the time the subject is enrolled.
3. Subjects with Body Mass Index (BMI) of 25-40 Kg/m^2, with a maximum weight of 350 lbs., during the study.
4. Only subjects who are in general good health will be included.

9.0 SUBJECT SELECTION (Continued)

9.1 Inclusion Criteria: (Continued)

5. Negative Urine Pregnancy Test for women of child bearing age.
6. Subjects who have completed the informed consent process and voluntarily signed a written informed consent.
7. The subjects qualifying for this study will be subjects who are motivated to lose weight. Factors to be considered for inclusion, are those that will insure the subject will cooperate, will keep all scheduled appointments, has the psychological motivation to lose weight, and will complete all phases of the testing period.

9.2 Exclusion Criteria:

1. Subjects who require or are currently taking Statins as Lipitor, Zocor, and Mevacor or taking any prescription medication or lipid lowering agents.
2. Subjects who have any known endrocrine disease or surgical condition which may interfere with this study.
3. Subjects who have diabetes, kidney or liver disease, phenylketonuria or in the doctor's judgement, any other unstable medical conditions.
4. Subjects who cannot return as required during the evaluations.
5. Conditions apparent at entry or recognized after entry that are likely to invalidate a subject's consent to participate in this study, limit the ability of a subject to regularly attend all study visits or comply with all other protocol requirements such as: diseases, injuries, alcoholism, drug abuse, psychosis, antagonistic personality, poor motivation, infirmity or other problems that may be emotional, intellectual, psychological or social.
6. Females who are pregnant or lactating.
7. Subjects who have been taking any investigational drugs 30 days prior to enrollment.
8. Employees of IRSI or other testing firms/laboratories, cosmetic or raw goods manufacturers and suppliers.
9. Must not be allergic to weight loss products or supplements.

All subjects will receive full instructions about the study and will be asked to read and sign the Informed Consent (Attached) prior to being interviewed and having blood drawn; a copy of the Consent will be given to each subject. Subjects will then be individually interviewed and data will be entered into Case Report Form 1 (Attached), prior to evaluation for inclusion in the study. A physician will participate in the evaluation of each subject for inclusion in the study.

If, following the evaluation of the subject and review of blood chemistries, a determination is made to assign the subject to the study, the subject will be assigned his/her subject number and the subject will follow the study methods and procedures listed below. It is anticipated that blood drawing and medical evaluations will precede the actual start of the study, so as to be able to exclude those who do not qualify.

10.0 STUDY PROCEDURE

The study will involve a minimum of eight (8) visits by the subjects who complete the study. The visits will consist of initial qualifying visits followed by seven (7) bi-weekly visits. Subjects will be called once a week to check on their progress and encouraged to follow the diet plan.

10.1 STUDY VISITS

Day (-7)	VISIT 1 -	Physician Visit. Blood Chemistries
Day 0	VISIT 2 -	Randomized subjects begin study, baseline data taken. Subjects given instructions.
Day 14 (± 1 Day)	VISIT 3 -	Completion of Week 2.
Day 28 (± 1 Day)	VISIT 4 -	Completion of Week 4.
Day 42 (± 2 Days)	VISIT 5 -	Completion of Week 6.
Day 56 (± 2 Days)	VISIT 6 -	Completion of Week 8.
Day 70 (± 3 Days)	VISIT 7 -	Completion of Week 10.
Day 84 (± 3 Days)	VISIT 8 -	Completion of Week 12. Physician Visit Blood Chemistries

The answers given by the subjects at an initial telephone screening interview as well as at the intitial screening interview will be analyzed to select sufficient qualified subjects who appear to have the psychological motivation to lose weight.

The subjects who are entered into the study on Day one (1) (Baseline) will be instructed in study procedures, given the recommended diet and will begin the study. These subjects will be required to attend six (6) additional bi-weekly visits. Subjects will be questioned on their progress at each visit. The chart on the following page presents in table form the treatment procedures schedules that will be followed during the study.

10.0 STUDY PROCEDURE (Continued)

10.1 STUDY VISITS (Continued)

The following chart outlines the treatment schedule that will be adhered to during the study.

TREATMENT PERIOD SCHEDULE									
	SELECTION OF SUBJECTS	DIETING PERIOD							
TREATMENT WEEK #		-1	0	2	4	6	8	10	12
STUDY VISIT	NO	YES	YES	YES	YES	YES	YES	YES	YES
VISIT #		-1	0	1	2	3	4	5	6
ACTUAL VISIT DAY #		-7	0	14 ± 1	28 ± 1	42 ± 2	56 ± 2	70 ± 3	84 ± 3
Telephone Screening	X								
Medical History/(M.D.) Follow-up		X							X
Informed Consent		X							
Weight	X*	X	X	X	X	X	X	X	X
Height	X								
Blood Draw		X							X
Blood Pressure/Pulse		X							X
UPT (Females of childbearing potential)		X							
Waist (Inches)			X	X	X	X	X	X	X
Product Dispensed			X	X	X	X	X	X	
Collect Product (Containers)				X	X	X	X	X	X
Product Questionnaire									X

* Telephone Screening will include taking the subject's weight to determine inclusion eligibility.

10.2 PRODUCT USE

Study product will be provided to the subjects by the sponsor, Geon Technologies Corporation and will consist of identically marked BLINDED containers of product or placebo.

Subjects will be given one (1) blinded container of TREATMENT or PLACEBO product every two (2) weeks and will remain on the same regimen, treatment or placebo throughout the study. Each subject will be instructed to take the product three (3) times daily thirty (30) minutes prior to meals within the suggested diet plan.

Subjects will be instructed to take one (1) tablet three (3) times a day for fourteen (14) days and then to return to the test site for weighing and waist measurement.

Instructions will be clearly marked on each container as follows:

Take this product three (3) times a day, thirty (30) minutes before meals.

Subjects will be instructed to return the used containers at each visit. The containers will be checked for compliance.

10.0 STUDY PROCEDURE (Continued)

10.2 PRODUCT USE (Continued)

Subjects will be instructed to eat well balanced meals as specified in the provided diet plan (Diet attached), or to substitute a low calorie frozen dinner such as Stoeffer's Lean Cuisine or Weight Watcher' s Frozen entrees for lunch or dinner. Only fruit or vegetables should be taken as snack foods.

10.3 BLINDING

The product containers will be supplied in a blinded and uniquely coded manner by the study Sponsor. Each unique code number on the container will be assigned to a specific study subject and recorded on a product assignment log. A sealed envelope containing the product identification will be supplied to the Investigator and will be opened only in the event of a medical emergency. The Sponsor will also maintain the same code and will be available to the Investigator at all times (24 hours / day, 7 days / week) should an individual code need to be broken. At the end of the study, when all CRFs have been audited and queries resolved, the code will be supplied to data processing for statistical evaluation. Note: Changes to the CRFs and statistical report should not be made after the blind has been broken. Individuals monitoring or auditing the study should not have access to the code until the data is locked.

11.0 CLINICAL OBSERVATIONS

Subjects will be seen bi-weekly (weeks 0, 2, 4, 6, 8, 10 and 12) and a Subject Questionnaire will be completed at the final visit. At each visit, the subjects will be evaluated by study personnel and the evaluations for these visits will be recorded on Case Report Forms.

The containers of returned used product will be inspected for use (compliance).

Laboratory data will be attached to the Case Report Forms for all appropriate visits. Laboratory data (fasting blood draw) will be taken at pre baseline visit -1 and at week 12.

Body weight and measurements will be measured on each individual subject without outer clothing (i.e., shoes, coats, jackets, sweaters, gloves, hats, etc.). Keys, heavy jewelry and coins will be set aside for each measurement. Sitting blood pressure and pulse will be measured at each visit on the same arm. Whenever possible, all examinations will be conducted for each subject at essentially the same time of day and by the same examiner. The time of day will be recorded for each measurement session.

11.1 CLINICAL LABORATORY PROCEDURES

All clinical laboratory determinations will be performed by Lab Corp. A Normal Laboratories Values Form from Lab Corp. will be submitted. All blood will be drawn by a qualified Phlebotomist. Total lipid levels, blood sugar and liver enzymes will be performed by Lab Corp. on each blood sample. Any abnormal laboratory values will be reported.

12.0 INVESTIGATOR INSTRUCTIONS

The Investigator will receive in written form all known contraindications, warnings, precautions, and adverse reactions associated with administration of the study material that are not explained in the protocol. If new information becomes available while the study is in progress the Investigator will be advised.

13.0 ADVERSE REACTIONS/PRODUCT EXPERIENCES

Adverse experiences are defined as any unwanted sign, symptoms or medical occurrence experienced by the subject whether or not considered product-related. All such experiences are to be entered on the appropriate Case Report Form under Adverse Experiences with regard to severity, onset date, duration, frequency, product relationship and action taken.

Both expected and unexpected untoward experiences should be recorded, but the effects which represent a lack of efficacy (e.g., the failure of the subject to exhibit an expected weight loss) should not be listed as an adverse experience since this information will be obtained in more specific detail elsewhere. Similarly, minor increases or decreases in blood pressure or pulse rate as well as minor changes in lab values, as long as such changes remain within the lab specified normal range, will not be considered adverse experiences. The information recorded should be based on the signs or symptoms detected in the examination and interview with the subject.

In addition to the information obtained from these sources, the subject would be asked the following questions: "How have you been feeling?". Signs and symptoms should be recorded in a concise manner using acceptable medical terminology to minimize vague, ambiguous or colloquial expressions.

Any adverse experiences will be reported to the study personnel as soon as possible. An adverse experience is any untoward medical occurrence experienced by a patient/subject whether or not considered product related. An adverse experience must have an onset time after the subject is enrolled in the study and generally within one (1) week after the subject's participation in the study has ended. The endpoint will depend on the nature of the product being tested.

An adverse experience may consist of a:

- Disease or injury
- Exacerbation of preexisting illness or condition
- Recurrence of an intermittent illness or condition
- Set of related signs or symptoms
- Single sign or symptom

Adverse experiences will be recorded on the appropriate case report form and include the Investigator's assessment of product relationship as follows:

- 0 None
- 1 Unlikely / Remote
- 2 Possible
- 3 Probable / Likely
- 4 Certain / Definite

13.0 ADVERSE REACTIONS/PRODUCT EXPERIENCES (CONT'D)

The Investigator's assessment will be summarized in the final report.

Serious adverse experiences will be reported to the Sponsor within 24 hours of recording the experience (when possible). A serious adverse experience will be defined as any experience which is (any one or more of the following):

- Fatal
- Life-threatening
- Persistent or significant disability/incapacity
- Required or prolongs inpatient hospitalization
- Results in congenital anomaly or birth defect

Proper judgement should be exercised in deciding whether expedited reporting is appropriate in other situations, such as events that may not be immediately life-threatening or result in death or hospitalization but may jeopardize the patient or may require intervention to prevent one of the other outcomes listed in the definition above. These should also usually be considered serious (21 C.F.R., Vol. 62, No. 194, 52243). Examples are:

- Overdose
- Intensive treatment in an emergency room or at home for allergic bronchospasm
- Development of drug dependency or drug abuse

IRSI, IRSI staff and investigators do not assume Sponsor obligations for reporting Serious AEs to the FDA.

Serious adverse experiences will be reported to the IRB and Sponsor/Monitor within 24 hours of IRSI notification, sooner if possible. Sponsor/Monitor SAE report contact:

Contact Name:	Kevin Dailey
Company and Address:	Goen Technologies Corporation 8 Ridgedale Avenue Cedar Knolls, NJ 07927
Telephone:	(973) 267-4400 Ext 4068
Fax:	(973) 267-4400
Email:	Kevin.dailey@Goengroup.com

The subject should be followed carefully until the condition disappears and/or the etiology is identified. Also note the subject may report a reaction that is favorable which is not in any other assessment being made in this study. This type of report should be properly recorded.

14.0 CONCOMITANT ILLNESS/TREATMENT

Any concomitant illness which a subject develops during the treatment period must be recorded on the appropriate case report form. A concomitant illness is an illness, disorder or pathology for which there is no reason to assume the illness, disorder, or pathology is a consequence of the study product being administered.

The subjects will be advised at study entrances, to contact the investigational site if medical need necessitates the use of concomitant medication (s) during the course of the study, so that proper medical advice can be obtained. The Investigator must provide the study sponsor with complete information concerning the reason and type of medication given. Administration of all such medication must be reported in the appropriate section of the case report form.

15.0 INFORMED CONSENT

Written Informed Consent must be voluntarily obtained from each subject before being entered into the study. (see attached).

16.0 INSTITUTIONAL REVIEW BOARD APPROVAL

Any study conducted in an institutional or non-institutional setting or in private practice is to have the approval of a properly constituted committee responsible for approving clinical studies. The sponsor will not ship the clinical supplies until assurance of compliance with this requirement is obtained.

Furthermore, the study must not begin until proof of compliance has been received and review by the sponsor.

17.0 QUALITY ASSURANCE

The Quality Assurance unit of IRSI will audit the study for accuracy, consistency and proper documentation in accordance to IRSI SOPs and practices. The final report will be examined to confirm agreement with the protocol and study raw data. The study will be conducted in accordance with FDA GCP regulations and ICH guidelines with the following noted: This is not an IND / NDA clinical trial. IRSI does not assume any Sponsor obligations as stipulated in FDA GCP and ICH documents.

18.0 RECORDING OF DATA AND CORRECTIONS

All data and information will be recorded on specific case report forms and this information will be neatly recorded in type or legibly printed in black ink. Any errors will be crossed out and the correct entry made and initialed and dated by the principal investigator or his designee.

19.0 DISCONTINUATION OF THE STUDY

The Sponsor, the Principal Investigator and IRSI have the right to discontinue the study for medical safety or administrative reasons at any time. Appropriate procedures will be followed to ensure the safe withdrawal of each subject from the study.

While the Investigator will make all possible efforts to encourage subjects to fulfill all of the study requirements, the following criteria shall define completion of the study by a subject.

19.0 DISCONTINUATION OF THE STUDY (Continued)

1. Attending the scheduled appointments within the protocol guidelines or by a change of schedule by a subject who can be presumed not to have utilized the (Trim Spa Ultra or Placebo) product regularly because of lack of product (i.e. did not pick up product as needed.

2. Subjects who miss more than three (3) doses in the seven (7) day period, Treatment or Placebo, over the twelve (12) weeks of evaluation, or subjects who returned full or partially full containers of products (count) which indicates that the subject did not comply with study procedures.

3. Subjects may be considered drop-outs if adverse experience, concomitant illness and/or medication should interfere with the diet program. However, such drop-outs will not be replaced unless so requested by the sponsor and will be counted towards the completed subject total for financial accounting.

If a subject's treatment had to be discontinued because of an adverse effect, it will be documented as such. All Case Report Forms completed by the subjects and the Investigator must be returned to IRSI for transmittal to the sponsor.

The subject has the right to discontinue participation at any point in the study. Subjects will be encouraged to complete as many evaluation visits as possible in order to facilitate safe withdrawal from the study.

20.0 ADMINISTRATIVE ASPECTS

REPORT FORMS:

The following report forms will be used for this study:

1. Informed Consent
2. Initial Screening Form
3. Motivation Questionnaire
4. Clinical Date - By Visit (Case Record Forms)
5. Subjects Questionnaires - By visit

FORMS FOR INTERNAL USE:

6. Body Mass Ratio Report

ATTACHMENT TO BE GIVEN TO SUBJECTS:

7. Diet Instructions and general instructions diary

21.0 EFFICACY

The test product will be evaluated and compared to placebo for its ability to contribute to weight loss over time, including comparing baseline (week 0) to the final weight (week 12). The subjects' assessment of their satisfaction with the product will also be evaluated.

22.0 STATISTICAL ANALYSIS

Mean weight loss, mean change in body measurements taken at 2 week intervals in relation to baseline (week 0) will be estimated and compared within groups between groups, as will mean change in vital signs.

Data will analyzed using the student t-test and analysis of variance test (ANOVA) (i.e., product comparison, visits, subjects and visits by subjects as sources of variation). The significance level for the trend in weight loss (i.e., linear and quadratic, etc.) will also be estimated from the analysis of variance test. A significant difference is with a $p \leq 0.05$.

The proportion of subjects producing weight loss in 2-week intervals in relation to baseline in each group will be subjected to binomial test to estimate the significance level of the effect of the product as compared to placebo on weight reduction.

The above noted methods will be applied to perform two (2) separate analysis on:

1. Each group of all subjects entered into the study

And

2. Each group of subjects who complete all twelve (12) weeks of the study.

23.0 DURATION

The study will take twelve (12) full weeks to complete.

24.0 RECEIPT OF PROTOCOL / CHANGES TO THE PROTOCOL

No clinical procedure will begin until a copy of the protocol, signed by authorized personnel of IRSI and the Sponsor, has been received by IRSI. By signing the protocol, the sponsor authorizes the use and content of case report forms designed by IRSI for this study.

Changes to the protocol must be approved in writing by IRSI, Principal Investigator, Sponsor and the Institutional Review Board prior to implementation. The exception shall be when a change is required in the interest of subject protection or safety. In such (safety) instances, the Sponsor and IRB shall be notified within 24-hours of the change, whenever possible.

25.0 REPORTING RESULTS

A topline evaluation will be provided to the Sponsor verbally as soon after completion as possible. A draft report containing all of the data and interpretations provided to the Sponsor approximately 4 weeks after the study has been completed. Upon approval of the draft and satisfaction of any financial obligations, a final report will be issued.

26.0 RECORD RETENTION

IRSI shall assume the Investigator responsibilities of maintaining study records for a period of two (2) years following the date a marketing application is approved for the test material(s) for the indication for which it is being tested; or, if no application is to be filed or if the application is not approved for such indication, until two (2) years after the investigation is discontinued and FDA is notified, if required. Material may be archived in electronic or hard copy form.

IRSI does not assume any sponsor obligation regarding record retention or notification/submission to FDA. Prior to study initiation the sponsor shall provide written notification to IRSI of any submissions to or approvals sought from FDA for the test materials being studied.

1. Goen Technologies Corporation will not make any claims based on the study prior to its completion and receipt of the final report or written notification of the results, and
2. Goen Technologies Corporation agrees not to misrepresent the results of this study.

27.0 COMPLETED SUBJECTS

Completed subjects will meet the following criteria:

1. Enrolled in accordance with Inclusion/Exclusion Criteria (or deviation allowed by Sponsor and Investigator in writing).
2. Completed all evaluation visits, Product use, and Form entries as indicated in the protocol.
3. Completed the 12-week study in accordance with the Protocol instructions.

APPENDIX I

SCREENING QUESTIONNAIRE AND FORMS

SCREENER QUESTIONNAIRE
3023GTC0904

APPENDIX II

INSTRUCTIONS FOR PRODUCT USE

DIRECTIONS FOR USE

You will be assigned either the TRIM SPA ULTRA or the Placebo, not both.

PRODUCT NAME: TRIM SPA ULTRA
Directions:

Take this product three (3) times a day, thirty (30) minutes before meal.

PRODUCT NAME: Placebo
Directions:

Take this product three (3) times a day, thirty (30) minutes before meal.

Consult.Stat
Complete Statistical Services
5754 Loyola Street
Macungie, PA 18062
610-349-4090 (Voice mail)
610-402-2497 (Office)

April 17, 2005

Dr. Albert Fleischner
Goen Technologies Corporation
8 Ridgedale Avenue
Cedar Knolls, NJ 07927

Dear Dr. Fleischner;

Thank you for the opportunity to review the data provided by Dr Boisits from International Research Services Inc. (IRSI) last week. The CD which arrived via UPS overnight contained two files:

1. 'GTC3023 Weight Loss Revision1' which contained thirty four pages of actual data and computer generated statistical output. This MS-Word document contained data that I was able to abstract and compare to results from the following report.
2. '3023 Draft REP' which contains the data report from IRSI submitted to Goen, dated 04-05-05. This file contains the final data report as well as the instructions as to how the trial was conducted.

I also received a 19 page fax report from Goen Technologies Corporation, dated 04-14-05 which contains several copies of pages from the GTC3023 Weight Loss Revision1 report as well as blood work data which are not in a format which would allow me to recreate the analysis, however I can comment on the data report(s) provided.

Data procedures for analysis at Consult.Stat

From the 'GTC3023 Weight Loss Revision1' file I was able to cut and paste the data into an ASCII notepad text file. Through the use of translation and replace functions I was able to bring this raw data into SPSS system file. The file contained information including: subject identification number, age, gender, group membership (Product or Control), seven bi-weekly measurements of weight, weight change (which I assume is baseline weight minus final weight at week 12, as well as a dichotomous signed variable for positive or negative weight gain.

Once the data were retrieved into SPSS, I performed several data validation analysis runs, and compared those runs to the report. Without a copy of the actual data files used by

IRSI there is not an expectation that the values from my analysis would exactly agree with the results reported, but I am convinced that the data that I abstracted fairly represents those data in the report.

Comments on the reports provided

With my limited data set, I was not able to exactly duplicate the values obtained in the 3023 Draft Report file, but I did not notice any differences that would have changed the interpretation of the results. For example, the data contained in Table 1 of the report contains no significant p-values comparing Product and Controls by independent t-test. I repeated this analysis and while the p-values were different, there were no interpretation changes. See Table 1 below. There are no interpretation differences in this table.

Table 1: Comparison of values obtained by IRSI and calculated by Consult.Stat.

	p-value obtained by IRSI	**p-value obtained by my analysis**
BASELINE	0.326	0.234
WEEK 2	0.424	0.314
WEEK 4	0.449	0.339
WEEK 6	0.523	0.406
WEEK 8	0.559	0.444
WEEK 10	0.488	0.375
WEEK 12	0.587	0.468

Comments on the data analysis performed by IRSI

I found no mistakes in the reports that I reviewed from IRSI. The interpretation of the data is accurate given the procedures that were used. While I did not have the actual data that was used to generate the report the analysis that I was able to review seemed to be accurate and well prepared.

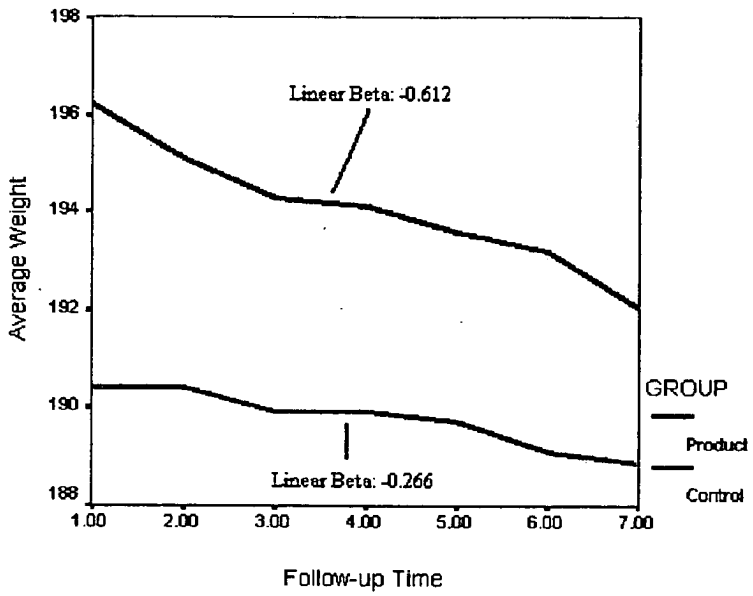
The study methods and inclusion and exclusion criteria described in the report are consistent with standard research procedures and are will reported and described. Data analysis procedures used (group and paired t-test procedures for continuous data and chi-square analysis for discrete data) are also consistent with data of this nature. All of the analysis procedures reported in this report are basic and typically well understood. The reports include goodness of fit analysis and several comparisons based on percent change of weight all based on baseline assessments. This is also a sound methodology.

Re-analysis using the provided data

The research design that was used for this study provides for data analysis that is much stronger than the t-tests and chi-square analysis provided in the report. Since there are two groups in the study with data collection on the outcome variable (weight) it is possible to use a more robust statistical model on this data. The model to use is a repeated measures model with regression. This model works as an Analysis of Variance with repeated measures. Once slopes are computed for each group they can be compared by

examination of 95% Confidence Intervals. There are two ways to do this: first a Confidence interval interpretation (Neter J, Wasserman W), or an exact p-value method (Sneidecor and Cochran).

Most studies do not include this analysis as it is more sophisticated and more difficult to interpret. However the analysis is more robust than the one used by IRSI and is not prone to experiment-wise error. I used this analysis on the data that I had at my disposal as a way to validate the findings from IRSI. The linear analysis is included in the figure and table below.



Interpretation of this figure shows that the Control group lost weight over the course of this study as reflected in the negative beta coefficient (-0.266) calculated by linear regression. However, the Product group had a much steeper decline in weight as indicated by a beta (-0.612). Statistical significance of the slopes is determined by the confidence intervals located in the following table.

Group	Slope	95% Confidence Interval
Product	-0.612	-0.761 to -0.463
Control	-0.266	-0.348 to -0.184

Interpretation of the above table is important for understanding the entire project. There is a significant difference between slopes as indicated by non overlapping confidence intervals. Notice also that the slope estimate for each group is not contained within the 95% Confidence Interval of the other group. These results are conclusive based on the data provided in that they are not obstructed by risks of multiple comparisons and agree with the overall report provided by IRSI.

I do not have the data to check the results of the laboratory values included in the fax report. The analysis contained in these data are descriptive in nature, defining or counting

the gains made during the course of the study by Product and Control subjects. These values are presented as percent increase in the variable without statistical testing.

Impressions and Conclusions

The purpose of this report was to investigate the procedures used by IRSI in their preparation of the data report. The methodology and analysis is accurate in its representation of the data that I was given. The experimental procedures reported by IRSI are sound and the study appears to have been well conducted. All drop outs are reported and do not seem to bias the study.

The results of my analysis, both repeating the analysis conducted by IRSI and the analysis that I was able to perform on the data included on the CD confirm the conclusion that subjects lost significantly more weight on the Trim Spa Product than did the Control group.

The laboratory values and descriptions provided to me on the fax report from Goen also seem to indicate a positive effect of the Trim Spa Product in some variables as well. In these results there was no difference reported for Alt. as compared to an increase in the Control group, negligible change in AST, greater positive change in HDL in Product as compared to Control, negligible change in LDL for both groups, total cholesterol benefit for Control group is also reported out performing the Product group.

The report from the fax indicates there are percent changes in all of these variables. These data should be compared statistically as the continuous nature of the variables would allow. I suggest a complete analysis using the regression method defined above and used for subject weight, or before and after (pre/post) analysis for these variables. I was not able to do this analysis with the data provided on the fax. In order to conduct this analysis I would need electronic files containing this data.

Again, thank you for the opportunity to examine this data, and do not hesitate to contact me with any questions that you may have.

Sincerely,

Thomas E. Wasser, PhD
Senior Biostatistician
Consult.Stat

innovative

Typical Certificate of Analysis

PQCF-101

Code # IL 244
PKG Lot # ———
MFG Lot # ———

Product: ULTRA FORMULA TRIM SPA GRAPE-FRUIT TABLETS

Mfg Date: 01-05
Expiration Date: 01-07

Physical Specifications :

Description : BEIGE CLEAR FILM COATED TABLETS			Disintegration Time: < 45.0 MIN.
Average Tab/Cap weight : 1250.00 mg ±3%	Shape/ Size: 5 CAP	Thickness:0.310"	Hardness :14.0 KP

Ingredient:	Label Claim:	Spec. Range%:	Method:
1.) HOODIA GORDONII CACTUS	150MG	90-110	input
2.) GRAPE FRUIT FREEZE DRIED	200MG	90-110	input
3.) GLUCOSAMINE HCL	50MG	90-110	input
4.)GREEN TEA 40% CAFFEINE, 40%POL	100MG	90-110	input
5.) NARINGIN POWDER 95%	5MG	90-110	input
6.) DI CALCIUM PHOSPHATE	251MG	90-110	input
7.) MICROCELLULOSE	395MG	90-110	input
8.) STEARIC ACID	45MG	90-110	input
9.) CROSSCARMELLOSE SODIUM	40MG	90-110	input
10.) AEROSIL 200/CABOSIL M5	2MG	90-110	input
11.) MAGNESIUM STEARATE	2MG	90-110	input

Microbiological:
Salmonella - negative
E-coli - negative

01/26/05

Consult.*Stat*

Complete Statistical Services
5754 Loyola St.
Macungie, PA 18062

610-402-2497 (Phone)
610-402-2247 (Fax)
Statbiz1@aol.com

Dr. Albert Fleischner
Goen Technologies Corporation
8 Ridgedale Avenue
Cedar Knolls, NJ 07927

May 5, 2005

Dear Dr. Fleischner,

Please find with this letter a copy of the blood chemical analysis that I performed based on the CD that I received from them about 10 days ago. I was able to perform analysis for the pretest-posttest control group design, which mixes baseline assessment to test the randomization used, and repeated measures within groups. In this case I used paired t-tests since there were only two time points in the data. Also, group t-tests were used to test for differences at posttest.

I used SPSS for this analysis and the sample size was approximately 60 subjects in each group. The data are displayed in table format with means ± standard deviation. The data are also presented in graphical format as is common with the design used at IRSI.

I have also included normal values as determined by the Health Networks Laboratory handbook published here in Allentown PA. I am aware that various sources do show different normal values. Each page of the report is produced with only one variable per page to facilitate easy understanding of the data. I have also included a small interpretation section at the bottom of each page, to report my impression of the data. I found that with the exception of Glucose, where subject on Product had significant gain (albeit within normal limits), there were no other findings in the data. It is important to note that while there were limited positive affects due to the Product there were no negative effects. This is important to consider in that no 'damage' was observed due to group membership.

I am happy to present this report to you, and as always contact me if you should have any questions regarding this report or analysis contained herein. If you should want a printed copy delivered to you by ground mail please let me know.

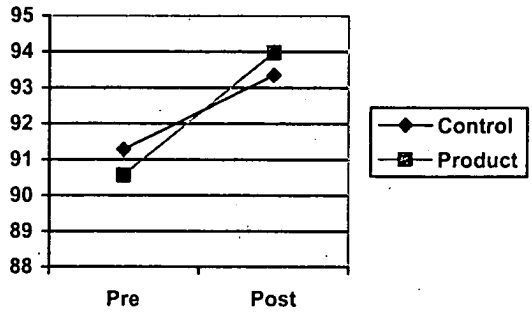
Sincerely,

Thomas E. Wasser, PhD
Chief, Quantitative Analysis
Consult.Stat

Glucose:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	91.28 ± 9.33	93.35 ± 11.63	0.075
Product	90.56 ± 8.08	93.98 ± 10.83	0.009
Group p-value	0.718	0.759	

Pre-Post Control Group design plot:



Normal Range: The normal range for Glucose levels assumes fasting, and is between 70-140 mg/dl. All tested means in the above statistics were well within normal limits.

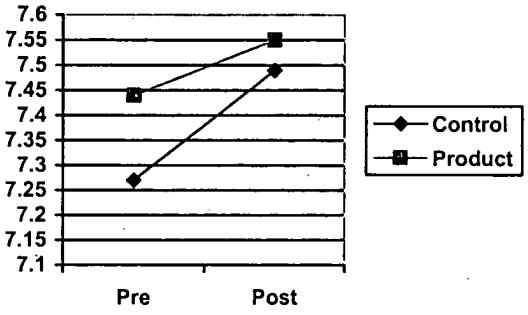
Interpretation: The Group p-value at pretest ($p = 0.718$) indicates that the Control and Product groups were equal at baseline and validates the randomization procedure. The significant increase within the normal range of Glucose for the Product group ($p = 0.009$) is a positive effect of treatment. The control group also experiences a small gain which can be interpreted as a normal fluctuation based on the non significant p-value or 0.075. This can be interpreted as trend significant however.

Overall there is slight evidence of positive effect on Glucose based on this data for those subjects receiving the product.

Total Protein:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	7.27 ± 0.56	7.49 ± 0.52	0.002
Product	7.44 ± 0.36	7.55 ± 0.44	0.040
Group p-value	0.039	0.517	

Pre-Post Control Group design plot:



Normal Range: The normal range for Total Protein levels which does not assume fasting, is between 6.0 and 8.5 g/dL. All tested means in the above statistics were well within normal limits.

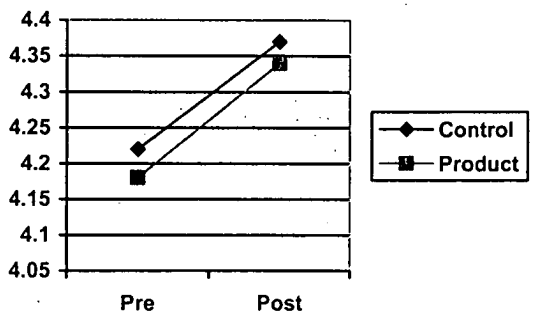
Interpretation: While these comparisons for Total Protein demonstrate that both the Control group and the Product group made statistically significant gains (p=0.002 and p=0.040 respectively) the findings are difficult to interpret because of the significant difference at baseline or Pretest (p=0.039). The randomization for this variable did not produce non-biased comparisons.

These Total Protein data are inconclusive.

Albumin:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	4.22 ± 0.26	4.37 ± 0.26	<0.001
Product	4.18 ± 0.23	4.34 ± 4.34	<0.001
Group p-value	0.451	0.592	

Pre-Post Control Group design plot:



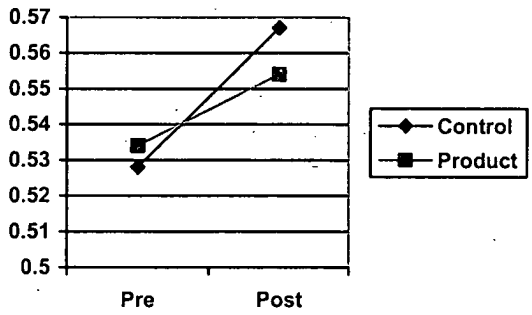
Normal Range: Values that are considered normal for serum Albumin are 3.0 to 5.5g/dL. All tests means were within normal range.

Interpretation: Both Product and Control group show significantly greater Albumin levels (both $p<0.001$), all within the normal range. There was no difference between Control and Product groups at baseline which indicates that these are valid tests. However, since neither group was out of range at any point in the study, and there are significant gains in both groups, there is no evidence that Product group has benefited.

Total Bilirubin:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	0.528 ± 0.26	0.567 ± 0.26	0.130
Product	0.534 ± 0.28	0.554 ± 0.32	0.544
Group p-value	0.883	0.816	

Pre-Post Control Group design plot:



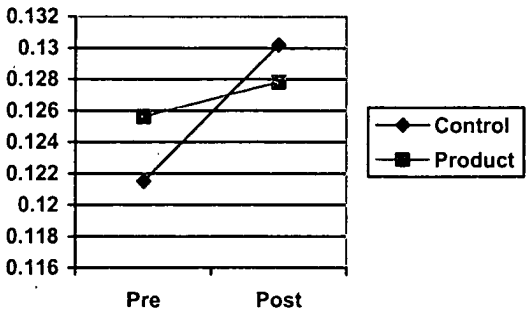
Normal Range: Values of 0.2 to 1.2 mg/dL are considered normal. No reference to fasting is made.

Interpretation: Inconclusive, there are no significant differences in any of the observed comparisons. All means are in the normal range for each time point. There were gains made by both the Product and Control group, however no changes were significant. There is no apparent benefit for Control or Product group membership. All gains that were made were within normal limits.

Direct Bilirubin:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	0.1215 ± 0.056	0.1302 ± 0.050	0.023
Product	0.1256 ± 0.055	0.1278 ± 0.060	0.689
Group p-value	0.619	0.814	

Pre-Post Control Group design plot:



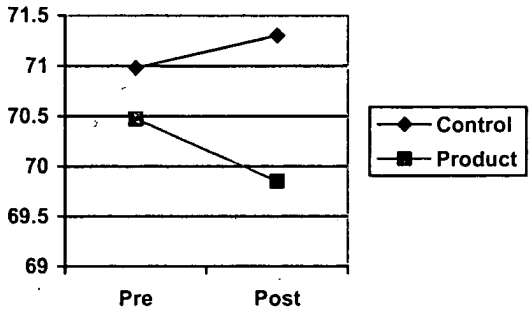
Normal Range: Values from 0.0 to 0.4 mg/dL are considered normal. There is no mention of the fasting status in the reference material.

Interpretation: This analysis is difficult to interpret. There is not a significant difference between groups at baseline (p=0.619) so the randomization is fine. There is a significant gain in the Control group (p=0.023) and a non-significant gain in the Product group. However there is not a significant difference at posttest (p=0.814). My interpretation is that there is not a benefit for Product and a slight overall benefit for Control but not relevant.

Alkaline Phosphatase:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	70.98 ± 21.37	71.30 ± 22.20	0.778
Product	70.47 ± 21.82	69.85 ± 20.78	0.545
Group p-value	0.978	0.713	

Pre-Post Control Group design plot:



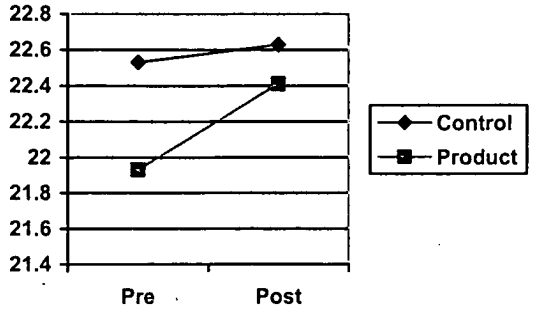
Normal Range: Values from 30 to 136 U/L are considered normal, there is no mention of fasting.

Interpretation: This pattern of scores resembles a dis-ordinal, non-significant interaction. All tested means were within normal limits. There were no significant differences noticed. Non-significant baseline p-value (p=0.978) validates the randomization. There was a slight, non-significant increase in the Control group but far from significant (p=0.778). As well as a slight non-significant decrease in the Product group (p=0.545). However there was not a difference in the posttest value (p=0.713). The conclusion based on this data is that of no effect.

AST (Aspartate Amino-transferase):

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	22.63 ± 7.66	22.63 ± 12.98	0.168
Product	21.93 ± 14.72	22.41 ± 14.27	0.453
Group p-value	0.507	0.928	

Pre-Post Control Group design plot:



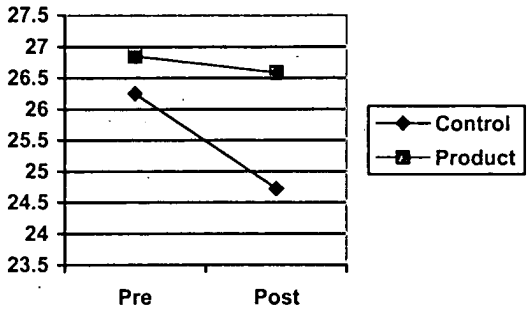
Normal Range: Serum levels from 0 to 39 U/L are considered normal for those ages 16 years and older.

Interpretation: A similar finding to what has been seen on other tests. Non significant values, and all means tested within the normal serum levels. There is a non-significance at baseline which validates the randomization (p=0.507). There were non-significant increases made by both Control and Product groups (p=0.168 and p=0.453 respectively). No effect is seen and this study is negative and the changes are viewed as random fluctuation.

ALT (Alanine Amino-Transferase):

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	26.25 ± 14.99	24.72 ± 13.09	0.318
Product	26.85 ± 21.80	26.58 ± 22.24	0.850
Group p-value	0.886	0.928	

Pre-Post Control Group design plot:



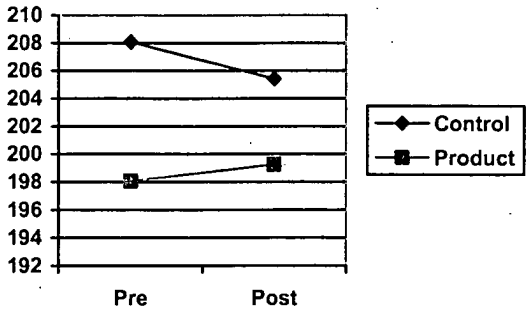
Normal Range: No mention of fasting as being required to determine normal ranges from 5 to 43 U/L.

Interpretation: This study was unique in that both values for Control and Product group actually decreased during the study, both non-significantly (p=0.318 and p=0.850 respectively). There was not a statistical difference at baseline which validates the randomization procedure, and there was not a statistical difference observed at posttest. The changes in the group values from pretest to posttest are viewed to be normal variation.

Total Cholesterol:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	208.07 ± 36.17	205.40 ± 40.86	0.368
Product	198.05 ± 34.69	199.25 ± 37.69	0.669
Group p-value	0.121	0.396	

Pre-Post Control Group design plot:



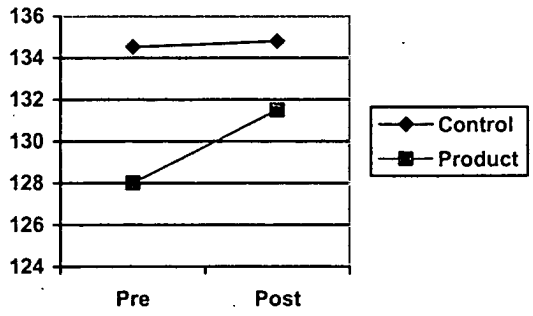
Normal Range: Values of 0 to 200 mg/dL for those individuals 20 years of age and older are considered to be normal. There is no mention in the reference as to fasting status requirements of the subject being tested.

Interpretation: There was an observed ten point difference between Control and Placebo group at baseline. This difference was not significant (p=0.121). It is interesting to note that the Control group had a higher than 'normal' mean for this variable both at pretest and posttest. And while the mean values decreased, this change was not significant (p=0.368). The mean value in the Product group increase by slightly more than a point (1.20) however this change was not significant and both mean values were within normal limits for this group. The conclusion is that the Product did not affect this variable either positively or negatively.

Triglycerides:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	134.53 ± 120.264	134.80 ± 105.99	0.975
Product	128.00 ± 101.344	131.49 ± 107.138	0.666
Group p-value	0.744	0.866	

Pre-Post Control Group design plot:



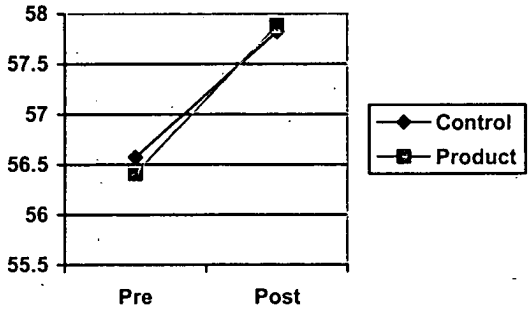
Normal Range: The values from 30 to 175 mg/dL are considered normal for this variable. Fasting collection for 12 hours is the preferred method.

Interpretation: Previous experience with Triglyceride measurement has told us that it is a difficult variable to measure. Subjects variables tend to vary wildly and as a result large standard deviations prevent reliable significance testing. This trait is observed in this data. There are no significant differences observed in this data. The six point difference at baseline is not significant (p=0.744) and validates the randomization process. All values are in the normal testing range. The conclusion from this data is that there is neither a positive or negative effect of the Product.

HDL Cholesterol:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	56.57 ± 13.04	57.82 ± 13.43	0.192
Product	56.41 ± 14.20	57.88 ± 16.06	0.125
Group p-value	0.965	0.981	

Pre-Post Control Group design plot:



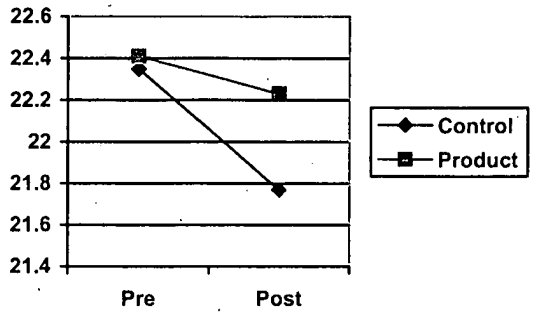
Normal Range: Values greater than 45 mg/dL are know to be protective from Coronary Artery Disease (CAD) and are considered to be optimum. Fasting specimens are desired but not required. The fasting should be between 12-14 hours.

Interpretation: I have not seen HDL values this high especially in individuals that desire to lose weight. Because of this, I re-examined this data looking for outliers or other values that might have caused mean values to be this high but found no evidence of bad data. All mean values are in the normal range and are quite extraordinary given my experience. There were no significant differences in the data as can be seen in the plot the lines mirror each other quite closely. The lack of a significant difference at baseline ($p=0.965$) validates the randomization procedure. Both the Product and Control group increase overtime but these differences are not significant ($p=0.125$ and $p= 0.192$ respectively).

Very Low Density Lipoprotein Cholesterol:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	22.35 ± 12.99	21.77 ± 10.59	0.697
Product	22.41 ± 14.78	22.23 ± 11.98	0.898
Group p-value	0.721	0.829	

Pre-Post Control Group design plot:



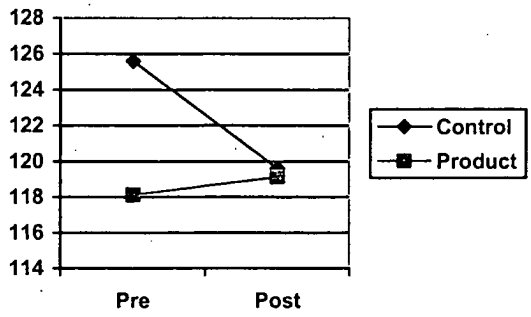
Normal Range: I was not able to locate normal ranges for VLDL.

Interpretation: There was not an observed significant difference at baseline which validates the randomization procedure (p=0.721). Both the Control and Product group demonstrated non-significant declines in VLDL from pretest to posttest (p=0.697 and p=0.898 respectively). The conclusion is that there is no effect of the Product on VLDL either in a positive or negative sense.

LDL Cholsesterol

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control	125.60 ± 28.74	119.60 ± 34.51	0.130
Product	118.11 ± 31.95	119.11 ± 32.53	0.721
Group p-value	0.125	0.938	

Pre-Post Control Group design plot:



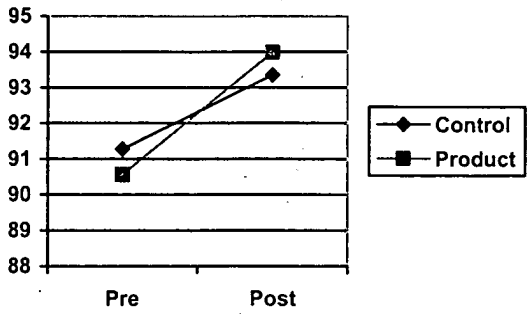
Normal Range: Fasting for 12 to 14 hours is requested but not required for measurement of this variable. Values up to 150 mg/dL are considered to be normal.

Interpretation: All mean values are within the normal range for this variable. There is not a significant difference in baseline values which validates the randomization procedure. There is a six point non-significant drop in the Control group (p=0.130), as well as a slight one point increase in the Product group which is also not significant (p=0.721). Overall these results indicate neither are positive or negative impact of the Product on the LDL variable.

LDL:

Group	Pre Mean ± Standard Deviation	Post Mean ± Standard Deviation	Paired p-value
Control			
Product			
Group p-value			

Pre-Post Control Group design plot:



Normal Range:

Interpretation:

CONCLUSIONS DRAWN FROM THE STUDY

1. TRIMSPA ULTRA Tablets has been demonstrated in this 12 week blind labeled weight loss study to be an effective & safe dietary supplement to achieve controlled weight loss in a population of moderately over weight subjects with BMIs between 25-40 that were motivated to lose weight.

2. 74% equivalent to 3 out of 4 subjects enrolled at random in the Trimspa Ultra group achieved measurable weight loss after 12 weeks daily use. Several subjects achieved weight losses more than 10 lbs up to 22.5 lbs during the course of this controlled study.

3. From the FDA important safety perspective, Trimspa Ultra was demonstrated to be a safe dietary supplement to lose weight at the three times a day regimen. The small number of 3 subjects who dropped out for side effect reasons and the excellent safety profile shown in the blood chemistry subjects confirm this conclusion.

4. This study was conducted between November, 2004 to February, 2005 which included the heavy eating holidays of Thanksgiving, Christmas and New Years. This represented an extra challenge to Trimspa Ultra which nevertheless resulted in meaningful weight loss.

5. It is hypothesized hat Hoodia acts on the appetite center to reduce appetite for food intake, thereby inducing weight loss. Trimspa Ultra contains 150 mg per tablet of Hoodia. It would be valuable to conduct a follow up dose response study of appetite reduction with a series of Hoodia dosage concentrations to optimize Hoodia content for appetite control. The safety profile demonstrated above at the 150 mg per Trimspa Ultra tablet dosage supports this recommendation to test higher concentrations of Hoodia as a weight loss dietary supplement.

SUMMARY OF WEIGHT LOSS RESULTS

1. A total of 140 qualified subjects based on a Body Mass Index (BMI) of 25-40 and motivation to lose weight were enrolled in the study.

2. Of 71 subjects randomly assigned to the Trimspa Ultra group, 58 Trimspa Ultra Tablet subjects completed the 12 week study. Of the 69 subject randomly assigned to the Placebo Tablets group, 58 Placebo Tablet subjects completed the 12 week study.

3. Attached is a color coded Tabulation of weights recorded for all subjects, including initial Baseline weights, and after 2 weeks, 4 weeks, 8 weeks, 10 weeks, and 12 weeks. Total weight losses are recorded in the last column. Subjects who dropped out of the study for various reasons are noted, i.e. 13/71 drop outs in the Trimspa Ultra group and 11/69 in the Placebo tablets group.

4. Total Weight Loss data for the Trimspa Ultra group and the Placebo group are shown in the 2X3 Table and the 2X2 Table that follow:

2X3 Table

Treatment Group	N*	# Lost Wt.	# Gained Wt.	No Wt. Change
Trimspa Ultra	58	43 (74%)	12 (21%)	3 (5%)
Placebo Tabs.	58	32 (55%)	18 (31%)	8 (14%)

2X2 Table

Treatment Group	N*	# Lost Wt.	# Gained Wt.+No Wt. Change
Trimspa Ultra	58	43 (74%)	15 (26%)
Placebo	58	32 (55%)	26 (45%)

* No. of subjects completing the 12 week study

These 2X3 and 2X2 Table data are being analyzed statistically and the results of the statistical analysis will be reported. Intuitively, at this point we can conclude with confidence from the data that Trimspa Ultra was significantly superior to Placebo Tablets in resultant weight loss after 12 weeks tid daily usage by the test subject population wherein the two blind labeled products were randomly distributed among the subjects. It should be noted that in blinded studies of this type wherein subjects are motivated to lose weight as an inclusion criteria and are encouraged to follow the American Heart Association "Dietary Guidlines for Healthy American Adults," it is not unusual to see positive Placebo efficacy effects as a result of of subjects' better dietary habits during the study period. Accordingly, it is significant that Trimspa Ultra demonstrated superior efficacy in achieving weight loss after 12 weeks study as recorded in the above 2X3 and 2X2 Tables. In this regard, the range of individual subject weight loss recorded in the Trimspa Ultra group ranged as high as 22.5 lbs with an average 12 week weight loss of 6.6 lbs.

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Aches & Claims / *By Laura Johannes*

Hoodia's Hunger Claims

With another three weeks of holiday treats ahead, what could sound more appealing than an all-natural product that dulls your appetite with no side effects? Hoodia Gordonii—an African plant extract racking up drugstore and Internet sales—claims to be just that. But doctors who treat obesity say there's only the barest indication of proof that this diet supplement works, and even if it does, many of the pills now on sale contain little or none of the active ingredient.

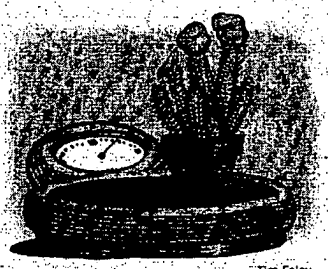
* * *

Dozens of companies are peddling Hoodia pills, which they claim safely act on the brain to dim hunger. Bottles with 60 to 90 pills generally sell for about $20 to $40 each. Many of these companies claim Hoodia, a succulent that grows in the deserts of South Africa, was used by the San tribe to stave off hunger during long treks over the Kalahari Desert.

The Hoodia craze is fed in part by the work of several well-known companies and South African government scientists. The plant's appetite-suppressant qualities were discovered in the 1960s during a survey of indigenous plants funded by the South African government. When it was given to mice, they stopped eating but suffered no other ill effects, according to Marthinus Horak, a scientist at South Africa's Council for Scientific and Industrial Research, a quasi-government research group that holds broad patents on Hoodia.

In 1997 British pharmaceutical concern **Phytopharm PLC** licensed the CSIR's patents and sublicensed them to pharmaceutical giant **Pfizer Inc.** Despite promising early results in humans, Pfizer dropped the project in 2003 because it couldn't synthesize the active ingredient chemically, says spokeswoman Kate Robins. Anglo-Dutch consumer-products company **Unilever** has picked up the sublicense and is planning human tests with the goal of bringing to market a food product containing Hoodia in about two years, says company spokesman Trevor Gorin.

However, so far there have been no data on human testing published in reputable medical journals on Hoodia. Even unpublished data are



Tim Foley

inconclusive—involving short time periods and small numbers of patients. Many Hoodia sellers are touting a 15-day study by Phytopharm and Pfizer. That study found that nine obese patients taking a potent high-dose extract of Hoodia dropped their caloric intake by 1,000 calories a day on average by the end of the tests, while a control group taking a placebo had essentially flat intake. But Richard Dixie, chief executive of Phytopharm, says the pills currently being sold can't claim to reproduce these results because Phytopharm hasn't disclosed how it made its extract or how much was administered.

Concerned about lack of safety testing, the Dutch government removed a batch of Hoodia from the market earlier this year, though there were no reports of harm. The U.S. Food and Drug Administration has so far announced no enforcement actions against it.

Nutritional supplements are only loosely regulated by the FDA, and there are no guarantees that the bottles actually contain what the label says. Unilever says it tested at least 10 representative samples of supplements sold in the U.S. by other companies, and none contained appreciable amounts of Hoodia. Moreover, the oft-quoted story that the San ate Hoodia to stave off hunger is "nonsense," Dr. Horak says. The San do occasionally consume it for its water content, he adds.

Obesity specialists say they haven't heard of any reported side effects with Hoodia, but point out that it hasn't been tested enough to know for sure that it is harmless. However tempting Hoodia may seem, it's best to wait until there are good scientific data available on its safety and efficacy.

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